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INDEX OF AUTHORS, 1973

A

- Abel, E. W., and Dunster, M. O. Formation of metal carbonyl derivatives of monothiocarbamates, dithiocarbamates, ureas, and thioureas from organotin intermediates, 98.
- Abel, Edward W., and Moorhouse, Stephen. Organotin reagents for the synthesis of π -allyl, π -cyclopentadienyl, π -indenyl, and other related π -enyl carbonyl derivatives of the transition metals, 1706.
- Adams, D. B. See Clark, D. T., 169.
- Adams, David M., and Christopher, Roger E. Single-crystal Raman spectrum of potassium trichloroammineplatinum(II) monohydrate, 2298.
- Adams, David M., and Fernando, W. Sumanasiri. The vibrational spectra of hexamethylcyclotrisiloxane and hexamethylcyclotrisilazane, 410.
- Adams, David M., Fernando, W. Sumanasiri, and Hooper, Martin A. Solution and single-crystal Raman study of $M(CO)_6$, where M = chromium, molybdenum, and tungsten, 2264.
- Adams, David M., and Hall, John R. Infrared and Raman spectra of single crystals of Magnus' green salt, tetraammineplatinum(II) tetrachloroplatinate(II), 1450.
- Adams, David M., and Hargreave, Martin M. Single-crystal infrared reflectance spectrum of potassium tetroxochromate(VI), and a new reflectance accessory, 1426.
- Addison, A. W., and Gillard, R. D. Adducts of co-ordination compounds. Part IX. Halogenocarbon solvates of trihalogenotripyridinerhodium(III). Part X. Solvates and adducts of dihalogenotetrapyridinerhodium(III) salts, 2002, 2009.
- Addison, A. W., Gillard, R. D., and Vaughan, D. H. Polarography of some rhodium(III) complexes, 1187.
- Adegite, A., and Ford-Smith, M. H. Kinetics of the oxidation of uranium(IV) ions by halogens in aqueous solution. Part I. Iodine and bromine. Part II. Chlorine, 134, 138.
- Ahmad, Naseer, Ainscough, Eric W., James, Tom A., and Robinson, Stephen D. Transition-metal complexes containing phosphorus ligands. Part IX. Triaryl phosphite derivatives of palladium(II) and platinum(II) dihalides. Part X. *ortho*-Metallation reactions involving some triaryl phosphite derivatives of palladium(II) and platinum(II) dihalides, 1148, 1151.
- Ainscough, Eric W., Brodie, Andrew M., and Furness, Alan R. Tertiary phosphine and arsine chalcogenide derivatives of Group VI metal carbonyl complexes, 2360.
- Ainscough, Eric W., Brodie, Andrew M., and Mentzer, Eric. Synthesis and reactivity of some Group VB chalcogenide cyclo-octa-1,5-diene rhodium(I) and iridium(I) complexes, 2167.
- Ainscough, Eric W. See also Ahmad, Naseer, 1148, 1151.
- Aitken, Gordon B., and McQuillan, Geoffrey P. Pyridine *N*-oxide and quinoline *N*-oxide complexes with bivalent manganese, cobalt, nickel, copper, and zinc thiocyanates and selenocyanates, 2637.
- Ajayi, Sunday O., and Goddard, Daniel R. Metal complexes involving the heavier donor atoms. Part V. Stability and heats of formation of silver(I), cadmium(II), and lead(II) complexes of semicarbazide, thiosemicarbazide, and selenosemicarbazide, 1751.
- Akitt, J. W. Proton chemical shifts of water in cationic hydration complexes and their contribution to water shifts in electrolyte solutions, 42.
- Proton chemical shift and hydration of the hydronium ion in aqueous acids, 49.
- Proton chemical shifts of aqueous aluminium salt solutions, 1177.
- Temperature dependence of proton chemical shifts of aqueous sodium fluoride, sodium hydroxide, and tetramethylammonium hydroxide: the internal tetramethylammonium ion standard, 1446.
- Albano, V. G., Sansoni, M., Chini, P., and Martinengo, S. Synthesis and crystallographic characterization of the carbidopentadecacarbonylhexarhodate dianion in its bis-(benzyltrimethylammonium) salt, the first example of a trigonal prismatic cluster of metal atoms, 651.
- Albinati, Alberto. See Zocchi, Marcello, 883.
- Alcock, Nathaniel W. Uranyl oxalate complexes. Part I. Preparation and crystal and molecular structure of ammonium uranyl trioxalate. Part II. Preparation and crystal and molecular structure of ammonium uranyl dioxalate. Part III. Preparation and crystal and molecular structure of ammonium diuranyl trioxalate, 1610, 1614, 1616.
- Alcock, Roland M., Hartley, Frank R., and Rogers, David E. Isolation and characterisation of aquo- and phenyl-(diethylenetriamine)platinum(II) complexes, 1070.
- Alessandrini, Saverio, Collamati, Ines, and Ercolani, Claudio. Cleavage of α -nitroketones by platinum(II) and platinum(0) and formation of platinum(II) complexes containing fulminato- and carboxylato-groups, 2409.
- Alexander, L. E. See Beattie, I. R., 465.
- Ali, Latif H., Cox, Alan, and Kemp, Terence J. Photochemistry of ferrocenyl ketones and acids in dimethyl sulphoxide and related solvents, 1468.
- Photochemistry of π -cyclopentadienylcarbonylmetal halides in dimethyl sulphoxide and related solvents, 1475.
- Ali, Latif H. See also Allen, David M., 1899.
- Alison, J. M. C., and Stephenson, T. A. Metal complexes of sulphur ligands. Part III. Reaction of platinum(II) *NN*-dialkylthiocarbamates, *O*-ethyl dithiocarbonate (xanthate), and *OO'*-diethyl dithiophosphate with tertiary phosphines, 254.
- Al-Karaghoul, A. Razzak, and Wood, John S. Crystal and molecular structure of bistrisphenyl(ethyl)phosphonium pentanitratocesium(III), 2318.
- Al-Kathumi, Khaliel M., and Kane-Maguire, Leon A. P. Mechanisms of organometallic reactions. Part I. Kinetics of the reaction of acetonitrile with tricarbonyl(tropylum) cations of metals in Group VI, 1683.

- Allan, Mellis, Aylett, Bernard J., Ellis, Ian A., and Porritt, Christopher J. Silicon-nitrogen compounds. Part X. Dehydrofluorination of tetrafluorosilane-amine adducts with anionic hydrides and related compounds, 2675.
- Allen, David M., Cox, Alan, Kemp, Terence J., and Ali, Latif H. Photochemistry of phosphorus(III) complexes of bromocarbonyl(π -cyclopentadienyl)iron(II) and dicarbonylchloro(π -cyclopentadienyl)-molybdenum(II) and -tungsten(II), 1899.
- Allen, Geoffrey C., and Tucker, Philip M. Surface oxidation of uranium metal as studied by X-ray photoelectron spectroscopy, 470.
- Allen, Geoffrey C., Curtis, Michael T., Hooper, Alan J., and Tucker, Philip M. X-Ray photoelectron spectroscopy of chromium-oxygen systems, 1675.
- Alsop, John E., and Davis, Reg. Mass spectrometry of transition-metal π -complexes. Part I. Studies on derivatives of cyclo-octatetraenetricarbonyliron, 1686.
- Alvey, Peter J., Bagnall, Kenneth W., and Brown, David. Dimethyl sulphoxide complexes of some actinoid tetranitrates, 2326.
- Alvey, Peter J., Bagnall, Kenneth W., Brown, David, and Edwards, John. Sulphoxide complexes of actinoid tetrahalides, 2308.
- Alyea, E. C., Bradley, Donald C., Copperthwaite, R. G., and Sales, Keith D. Three co-ordinated transition-metal compounds. Part II. Electronic spectra and magnetism of tris(bis(trimethylsilylamido)derivatives of scandium, titanium, vanadium, chromium, and iron, 185.
- Anderson, Duncan W. W., Benthall, John E., and Rankin, David W. H. Magnetic double resonance studies of silylaminodifluorophosphine and some related amines, 1215.
- Anderson, Duncan W. W., Ebsworth, E. A. V., and Rankin, David W. H. Hydride complexes of six-co-ordinate platinum, 854.
- Magnetic double resonance studies of some *trans*-bis(triethylphosphine) complexes of platinum, 2370.
- Anderson, J. Stuart. On infinitely adaptive structures, 1107.
- Anderson, John W., Barker, Geoffrey K., Drake, John E., and Rodger, Martin. Methylseleno-derivatives of Group IV, 1716.
- Anderson, Oren P. Crystal and molecular structure of tris-(1,10-phenanthroline)copper(II) perchlorate, 1237.
- Andrew, John E., and Blake, Antony B. Crystal structure of bis-[di- μ -(phenylmethoxy)-bis(pentane-2,4-dionato)]dicopper(II), 1102.
- Angus, Philip C., and Stobart, Stephen R. Stereochemical non-rigidity in germylcyclopentadiene and related derivatives of germane, 2374.
- Ansell, Gerald B. Tetrazoles and tetrazole complexes. Part I. Crystal structure of *cis*-bis[dimethyl(phenyl)-phosphine]bis(5-methyltetrazolato)palladium(II), 371.
- Anthoney, Martin E., Finch, Arthur, and Gardner, Peter J. The standard enthalpies of formation of aluminium(III) bromide and aluminium(III) iodide, 659.
- Apelblat, Alexander. Extraction of sulphuric acid by methyl diphenyl phosphite and tributyl phosphate, 1198.
- Ardrey, Robert E., Emsley, John, Robertson, Andrew J. B., and Williams, John K. Preparation and characterisation of alkylthio- and phenylthio-phosphetan 1-oxide derivatives. Mass spectrometric investigations of 40 phosphetan 1-oxide compounds. Differentiation of *cis*- and *trans*-ring methyl groups of aromatic shielding, 2641.
- Armstrong, David R., Perkins, Peter G., and Stewart, James J. P. Calculation of the electronic structure of boranes by the self-consistent molecular orbital method. Part II. Highly symmetrical cage anions, 627.
- Bond indices and valency, 838.
- Valencies and bond indices for the elements from hydrogen to chlorine, 2273.
- Calculation of the electronic structure of boranes by the self-consistent molecular orbital method. Part III. Excited states of cage species, 2277.
- Armstrong, Robert S., Peacock, Graeme, J., Skamp, Keith R., and Le Fèvre, Raymond J. W. Polarities and directional polarisabilities of trimethylamine adducts of boron trihydride and boron trihalides. Stereospecific solute-solvent interactions, 1132.
- Ašperger, S. See Bradić, Zdravko, 2514, Pavlović, D., 602, Pribanić, Marijan, 2518, and Žmikić, A., 1284.
- Astolfi, Rosalba, Collamati, Ines, Ercolani, Claudio. Complexing properties of α -nitroketones. Part II. Complexes of 2-nitroacetophenone and nitroacetone with chromium(III), iron(III), and aluminium(III), 2238.
- Attanasio, Donato, Collamati, Ines, Ercolani, Claudio, and Rotilio, Giovanni. Complexing properties of α -nitroketones. Part III. A stereochemical investigation of some new copper(II) α -nitroketone complexes and their base adducts with *O*- and *N*-donors, 2242.
- Atwood, Jerry L., and Smith, Karl D. Crystal structure of di- μ -chloro-bis[di- η -cyclopentadienylscandium(III)], 2487.
- Ault, John L., Harries, Hugo J., and Burgess, John. Complex formation with heptane-3,5-dione. Stabilities of some bivalent metal chelate complexes in aqueous dioxan (50%), 1095.
- Aylett, Bernard J., Ellis, Ian A., and Porritt, C. J. Silicon-nitrogen compounds. Part IX. Self-dehydrofluorination of tetrafluorosilane-amine adducts as a route to substituted aminofluorosilanes, 83.
- Aylett, Bernard J., Ellis, Ian A., and Richmond, John R. Trifluoroiodosilane and difluorodi-iodosilane: their properties and use in preparing fluorosilicon derivatives with Si-N, Si-O, and Si-S bonds, 981.
- Reaction of oxides of nitrogen with some silicon halides and hydride-halides, 1523.
- Aylett, Bernard J. See also Allen, Mellis, 2675.

B

- Bagnall, Kenneth W., du Preez, Jan G. H., Bajorek, Jan, Bonner, Leslie, Cooper, Howard, and Segal, Geoffrey. Amide complexes of uranium tetrahalides and uranyl chloride, 2682.
- Bagnall, Kenneth W. See also Alvey, Peter J., 2308, 2326.
- Bailey, Neil A., McKenzie, E. Donald, and Worthington, James M. Crystal and molecular structure of a solvate of chloro-[1,6-bis-(2'-pyridyl)-2,5-diazahexane]copper(II) chloride, 1227.
- Bailey, Peter L., and Bishop, Edmund. Hydrolysis of cyanogen chloride, 912.
- Reaction of sulphite ions with cyanogen chloride, 917.
- Bajorek, Jan. See Bagnall, Kenneth W., 2682.
- Baker, Edward N., and Reay, Brian R. Crystal and molecular structure of pentacarbonyl(trimethylphosphine sulphide)chromium(0), 2205.

- Ball, M. C., and Casson, M. J. Dehydration of calcium hydrogen phosphate dihydrate, 34.
- Ball, Matthew C., and Pope, Janet M. Solid-state reactions in the carbonylchlorobis(triphenylphosphine)iridium(I)-hydrogen chloride system, 1802.
- Bancroft, G. M., and Libbey, E. T. Bonding properties of ligands: a Mössbauer study of carbonyl complexes of iron(II), 2103.
- Bancroft, G. Michael, and Butler, K. David. Mössbauer spectra and bonding in four-co-ordinate tin compounds containing a tin-cobalt bond, 1694.
- Bandoli, Giuliano, Clemente, Dore A., Croatto, Ugo, Vidali, Maurizio, and Vigato, Pietro A. Crystal and molecular structure of $[N^N\text{-ethylenebis(salicylideneiminato)}](\text{methanol})\text{dioxouranium}$, 2331.
- Bandoli, Giuliano, Clemente, Dore A., Marangoni, G., and Cattalini, L. Ground-state *trans*-effect and molecular structure of trichloro(triphenylphosphine)gold(III), 886.
- Baracco, Livio, Halfpenny, Michael T., and McAuliffe, Charles A. Co-ordination complexes containing multidentate ligands. Part III. The visible spectra of some five-co-ordinate nickel(II) complexes containing tris(*o*-dimethylarsinophenyl)stibine. Trigonal bipyramidal and square pyramidal complexes, 1945.
- Barbucci, Rolando, Fabbrizzi, Luigi, Paoletti, Piero, and Vacca, Alberto. Thermodynamics of complex formation with linear aliphatic tetra-amines. Part III. Enthalpy and entropy contributions to the stability of metal complexes of 4,7-diazadecane-1,10-diamine, 1763.
- Barker, Geoffrey K. See Anderson, John W., 1716.
- Barker, Marten G., and Hooper, Alan J. Preparation and X-ray powder diffraction patterns of the sodium vanadates NaVO_3 , $\text{Na}_4\text{V}_2\text{O}_7$, and Na_3VO_4 , 1513.
- Reactions of sodium oxide with the oxides VO_2 , V_2O_5 , VO , and vanadium metal, 1517.
- Reactions of liquid sodium with transition-metal oxides. Part VI. Oxides of vanadium, 1520.
- Reactions of potassium monoxide with the oxides of vanadium, 2614.
- Barker, Marten G., Hooper, Alan J., and Lintonbon, Roger M. Reactions of the oxides of vanadium with liquid potassium, 2618.
- Barker, S. Alan. See Kennedy, John F., 1129.
- Barnard, Paul F. B., Lancaster, John C., Fernandopulle, Mary E., and McWhinnie, William R. The chemistry of 2-pyridylamine complexes of cobalt(II) and cobalt(III), 2172.
- Barnard, Robert, Bullock, Joseph I., Gellatly, Barry J., and Larkworthy, Leslie F. Chemistry of the trivalent actinides. Part III. Some chemical and physical properties of hydrated uranium(III) fluoride and the anhydrous chloride, bromide, and iodide. The stability of uranium(III) in aqueous solution and in organic solvents, 604.
- Bartunik, Hans D. See Holsboer, Florian, 1828.
- Bastow, Timothy J., and Whitfield, Harold J. Crystal structure of tetra-arsenic tetraselenide, 1739.
- Baur, Werner H., and Wiegardt, Karl. Crystal structure of di- μ -hydroxo-*trans*-diaquo-bis(triamminecobalt(III)) tetranitrate dihydrate, and a possible mechanism for the formation of the cation, 2669.
- Bear, Cedric A., and Trotter, James. Crystal structure of *fac*-chloro-[1,3-bis(dimethylarsino)propane]tricarboxylmanganese, 673.
- Crystal structures of 3-ethyl- and 5-ethyl-1,2-dihydro-1-methylpyridine(tricarboxyl)chromium, 2285.
- Beattie, I. R., Stokes, F. C., and Alexander, L. E. Vibrational spectra of some chloro- and methylchloro-species of cadmium, indium, tin, antimony, tellurium, and iodine, 465.
- Beauchamp, André L. See Makhija, Ramesh C., 2447.
- Beaumont, Ronald E., and Goel, Ram G. Organobismuth(v) compounds. Part VII. Preparation, characterization, and vibrational spectra of four- and five-co-ordinate tetraphenylbismuth(v) derivatives, 1394.
- Beaver, John A., and Drew, Michael G. B. Crystal and molecular structure of tetrachloro-di- μ_3 -oxo-tetra- μ -propoxo-tetraoxodipropoxotetramolybdenum($2Mo-Mo$), 1376.
- Beck, Wolfgang. See Holsboer, Florian, 1828.
- Bell, Bernard, Chatt, Joseph, and Leigh, G. Jeffery. Hydrido-complexes of osmium(II) and osmium(IV), 997.
- Bellitto, Carlo. See Furlani, Claudio, 2404.
- Bellon, Pierluigi, Manassero, Mario, and Sansoni, Mirella. An octahedral gold cluster: crystal and molecular structure of hexakis[tris(*p*-tolyl)phosphine]-octahedro-hexagold bis(tetraphenylborate), 2423.
- Benetti, Giuseppe. See Peyronel, Giorgio, 879.
- Bennett, M. A., Bramley, R., and Tomkins, I. B. Stereochemistry and absolute signs of $^2J_{P-H}$ nuclear spin coupling constants in methyl platinum(II) complexes containing tertiary phosphines, 166.
- Bennett, Ronald L., Bruce, Michael I., and Gardner, Richard C. F. Polyfluoroaromatic derivatives of metal carbonyls. Part IX. Reactions of pentafluorophenylsilver(I) with some transition-metal halogeno-complexes; oxidative-addition reactions of the complex carbonyl-(pentafluorophenyl)bis(triphenylphosphine)iridium(I), 2653.
- Benno, Robert H., and Fritchie, Charles J., jun. Molecular and crystal structures of tetra(methylgermanium) hexasulphide, 543.
- Benthams, John E. See Anderson, Duncan W. W., 1215.
- Bentley, F. F. See Finch, Arthur, 1863.
- Benton, D. J., and Moore, P. Rates of formation and dissociation of complexes of manganese(II) with the ligands 1,10-phenanthroline, 2,2'-bipyridine, and 2,2',2''-terpyridine in anhydrous methanol, 399.
- Beran, G., Carty, A. J., Chieh, P. C., and Patel, H. A. Synthesis, crystal structure, and infrared spectra of *trans*-dithiocyanatobis-[(3,3-dimethylbutynyl)diphenylphosphine]palladium(II), 488.
- Bermann, Manfred, and Van Wazer, John R. Diazaphosphetidinones with four-co-ordinated phosphorus, 813.
- Bertini, Ivano, Gatteschi, Dante, and Martini, Giacomo. Single-crystal polarized electronic and electron spin resonance spectra of dichlorobis(triphenylphosphine oxide)copper(II), 1644.
- Bianchi, A., Dapporto, P., Fallani, G., Ghilardi, C. A., and Sacconi, L. X-Ray structural evidence for the influence of geometrical distortion on the spin-state of five-co-ordinate cobalt(II) and nickel(II) complexes, 641.
- Biddlestone, Malcolm, and Shaw, Robert A. Phosphorus-nitrogen compounds. Part XXXVII. The syntheses, properties, and some reactions of (2,2,2-triphenylphosphazene-1-yl)-cyclotriphosphazatrienes and -cyclotetraphosphazetetraines, 2740.
- Birchall, Thomas, and Tun, Khin Mar. Reinvestigation of some iron dinitrosyl complexes with thio-ligands, 2521.
- Biruš, M. See Bradić, Zdravko, 2514, and Pribanić, Marijan, 2518.

- Biscarini, P., Fusina, L., Nivellini, G. D., Mangia, Alessandro, and Pelizzi, Giancarlo. Crystal and molecular structure of the 1:1 adduct between diphenyl sulphoxide and mercury(II) chloride, 159.
- Bishop, Edmund. See Bailey, Peter L., 912, 917.
- Bizri, O. F. See Gilson, T. R., 291.
- Blackborow, J. Richard. Resonance line broadening due to chemical exchange and quadrupole-induced relaxation in the nuclear magnetic resonance spectra of some boron-nitrogen adducts, 2139.
- Blackborow, J. Richard, and Lockhart, J. C. Reactions of boron tri-iodide with nitrogen donors. Some comparisons of boron tri-iodide with other boron halides, 1303.
- Blake, Antony B. See Andrew, John E., 1102.
- Bland, William J., Kemmitt, Raymond D. W., and Moore, Robert D. A π -bonded trifluoroacetonitrile complex of platinum(0), 1292.
- Bombieri, G. See Graziani, R., 451.
- Bonamico, Mario, Dessy, Giulia, Fares, Vincenzo, and Scaramuzza, Lucio. Structural studies of metal complexes with NN' -disubstituted thioureas. Part II. Crystal structure of dichlorobis-(NN' -diethylthiourea)-cobalt(II) (triclinic form), 876.
- Bonner, Leslie. See Bagnall, Kenneth W., 2682.
- Booth, Robert J., Starkie, Haydn C., Symons, Martyn C. R., and Eachus, Raymond S. Unstable intermediates. Part CXXXV. The formation of Sn^{3+} and Pb^{3+} centres in irradiated tin and lead salts, and their electron spin resonance parameters, 2233.
- Bor, György, Magon, Luciano, Maresca, Luciana, and Natile, Giovanni. Preparation and infrared spectroscopic characterization of some (oxydiacetato)uranyl(VI) complexes, 1308.
- Bossa, Mario. See Gattegno, Daniela, 1399.
- Bottomley, F., and Tong, S. B. Preparation and properties of some osmium nitrosylamines, 217.
- Boyd, Peter D. W., Toy, A. David, and Smith, Thomas D. A theoretical and experimental study of the electron spin resonance of a number of low symmetry copper(II) dimers, 1549.
- Boyd, Peter D. W. See also Toy, Alfred D., 1259.
- Bradford, C. W., and Nyholm, Ronald S. Oxidative addition reactions of triphenylphosphine with dodecacarbonyl-triosmium, 529.
- Bradić, Zdravko, Pavlović, M. Birus D., Pribanić, M., and Ašperger, S. Mechanism of octahedral substitutions in nonaqueous media. Part VIII. Replacement of chloride by nucleophiles in *trans*-chloro(L)bis(ethylene-diamine)cobalt(III) complexes in methanol, 2514.
- Bradley, D. C., Copperthwaite, R. G., Cotton, S. A., Sales, K. D., and Gibson, J. F. Three co-ordinated transition-metal compounds. Part III. Electron spin resonance studies on tris(bis(trimethylsilylamido)derivatives of titanium, chromium, and iron, 191.
- Bradley, D. C. See also Alyea, E. C., 185.
- Bradley, Donald C., Ghotra, Joginder S., and Hart, F. Alan. Low co-ordination numbers in lanthanide and actinide compounds. Part I. The preparation and characterisation of tris{bis(trimethylsilyl)amido}lanthanides, 1021.
- Bradley, Donald C., Rendall, Ian F., and Sales, Keith D. Covalent compounds of quadrivalent transition metals. Part VI. Spectroscopic studies on titanium, vanadium, and zirconium diethyldithiocarbamates, 2228.
- Braibanti, Antonio, Dallavalle, Francesco, Leporati, Enrico, and Mori, Giovanni. Acid-base properties of spin-aceamine and spinacine and their complexing capacity with divalent metals, 323.
- Acid-base properties of *N*-methylhistamine [4-(2-methyl-aminoethyl)imidazole] and *NN*-dimethylhistamine [4-(2-dimethylaminoethyl)imidazole] and their complexing capacity with cobalt(II), nickel(II), copper(II), and zinc(II), 2539.
- Bramley, R. See Bennett, M. A., 166.
- Braterman, Paul S., Milne, David W., Randall, Edward W., and Rosenberg, Edward. Carbon-13 nuclear magnetic resonance spectra of tungsten and molybdenum carbonyl derivatives, 1027.
- Braunstein, Pierre, and Clark, Robin J. H. The preparation, properties, and vibrational spectra of complexes containing the $AuCl_2^-$, $AuBr_2^-$, and AuI_2^- ions, 1845.
- Bridgart, Glenn J., and Wilson, Ivan R. Metal-ion catalysis in some reactions of hexacyanoferrate(III) ions. Part II. The oxidation of cysteine and related thiols in the presence of ethylenediaminetetra-acetic acid, 1281.
- Bridgart, Glenn J., Fuller, Michael W., and Wilson, Ivan R. Metal-ion catalysis in some reactions of hexacyanoferrate(III) ions. Part I. Copper catalysis in the oxidation of cysteine and related thiols, 1274.
- Bridgart, Glenn J., Waters, William A., and Wilson, Ivan R. Metal-ion catalysis in some reactions of hexacyanoferrate(III). Part III. The oxidation of hydroxylamine, 1582.
- Bridges, Douglas L. See Long, Gary J., 573.
- Briggs, David, Clark, David T., Keable, Howard R., and Kilner, Melvyn. E.s.c.a. studies of some transition-metal carbonyl complexes containing organonitrogen ligands, 2143.
- Briggs, David. See also Clark, David T., 169.
- Brill, T. B., and Welsh, W. A. Nuclear quadrupole resonance investigation of the comparative differences between hexachloro-stannate, -tellurate, and -plumbate resulting from cationic effects, 357.
- Brill, T. B. See also Gearhart, R. C., 359.
- Brodie, Andrew M., Johnson, Brian F. G., and Lewis, Jack. A series of tricarbonyl(polyene aldehyde)iron complexes, 1997.
- Brodie, Andrew M. See also Ainscough, Eric W., 2167, 2360.
- Brookes, P. R., and Shaw, B. L. Mercuric halide adducts of tertiary phosphine or tertiary arsine complexes of palladium(II) and platinum(II), 783.
- Bross, Kenneth. See Onak, Thomas, 2633.
- Broszkiewicz, Roman K. Pulse radiolysis studies on complexes of iridium, 1799.
- Brotherton, Peter Donald, and White, Allan Henry. Crystal structures of copper(II) sodium carbonate trihydrate (chalconatronite), 2338.
- Crystal structure of a new form (β) of tetrakis(thiourea)-mercury(II) chloride, 2696.
- Crystal structure of a new mercury(II) complex dichloro-mercury-2/3thiourea, 2698.
- Brotherton, Peter Donald, Healy, Peter C., Raston, C. L., and White, Allan Henry. Crystal structure of chlorobis-(thiourea)mercury(II) chloride, 334.
- Brown, Charles K., Georgiou, Denis, and Wilkinson, Geoffrey. Interaction of hydridocarbonyltris(triphenylphosphine) complexes of iridium(I) and rhodium(I) with organic acids, 929.

- Brown, Costello. See Onak, Thomas, 76.
- Brown, D. See Fuger, J., 428.
- Brown, David, Hall, Thomas L., and Moseley, Patrick T. Structural parameters and unit cell dimensions for the tetragonal actinide tetrachlorides (Th, Pa, U, and Np) and tetrabromides (Th and Pa), 686.
- Brown, David. See also Alvey, Peter J., 2308, 2326.
- Brown, David A., Glass, William K., and O'Daly, C. Studies of molybdenum and tungsten thiolates, 1311.
- Brown, D. H. and Jeffreys, J. A. D. Crystal and molecular structure of sodium di- μ -sulphido-bis-[(L-cysteinato)-oxomolybdate(v)] dihydrate, 732.
- Brown, J. David, Dobbie, Robert C., and Straughan, Brian P. Vibrational spectra of fluorocarbon-Group V derivatives. Part II. The compounds CF_3PX_2 where X = halogen or hydrogen, 1691.
- Brown, Kevin L., and Hall, David. Crystal structure of tetramethylammonium hexachlorodigallate(II), 1843.
- Brown, T. D., and Shepherd, T. M. Factors affecting the quantum efficiencies of fluorescent terbium(III) chelates in the solid state, 336.
- Browning, J., Empsall, H. D., Green, M., and Stone, F. G. A. Reactions of low-valent metal complexes with fluorocarbons. Part XXV. Phosphine, phosphite, and cycloocta-1,5-diene platinum complexes, 381.
- Brownstein, Morley, and Gillespie, R. J. The hydrogen fluoride solvent system. Part V. Solutions of SeF_4 and SeF_4BF_3 , 67.
- Bruce, Michael I., Ostaszewski, Andrew P. P. Group IB metal chemistry. Part I. Preparation and reactions of the carbonyl(hydrotripyrzazol-1-ylborato)copper(I) complex, 2433.
- Bruce, Michael I., Shaw, Gordon, and Stone, F. Gordon A. *ortho*-Metallation and related reactions. Part VI. Triaryl phosphite derivatives of dodecacarbonyltriruthenium, 1667.
- Bruce, Michael I. See also Bennett, Ronald L., 2653.
- Buck, Dorothy M. W. See Moore, Peter, 1602.
- Bula, Michael J., and Hartman, J. Stephen. Boron trihalide adducts of dimethyl sulphide. A nuclear magnetic resonance study of exchange reactions and mixed boron trihalide adducts, 1047.
- Bullen, Graham J. Crystallographic studies of the boron-nitrogen bond in aminoboranes. Part IV. Crystal and molecular structure of (diphenylmethylenamino)dimethylborane, 858.
- Bullen, Graham J., and Dann, Peter E. Molecular structures of non-geminally substituted phosphazenes. Part IV. Crystal structure of 2,4,4,trans-6,8,8-hexachloro-2,6-bis(dimethylamino)cyclotetraphosphazetetrane, 1453.
- Bullen, Graham J., and Mallinson, Paul R. Molecular structure of cycloborataphosphonians. Part II. Crystal structure of 1,1,3,3,5,5-hexaphenylcyclotriborataphosphoniane $[(\text{Ph}_2\text{P})\text{BH}_2]_3$, 1295.
- Bullock, Joseph I., Parrett, Frederick W., and Taylor, Nicholas J. Some metal halide-phosphorus halide-alkyl halide complexes. Part II. Reactions with niobium and tantalum pentachlorides and tungsten hexachloride, 522.
- Bullock, Joseph I. See also Barnard, Robert, 604.
- Bullock, Richard J. See Glentworth, Peter, 546, 969, 2364.
- Burdett, Jeremy K., Gardiner, Derek J., Turner, James J., Spratley, Richard D., and Tchir, Peter. Solution Raman spectrum and normal co-ordinate analysis of dioxygen difluoride, 1928.
- Burgess, J., Fraser, C. J. W., Haigh, I., and Peacock, R. D. The exchange reaction between rhenium hexafluoride and boron trichloride and enthalpies of formation of rhenium pentachloride and rhenium hexafluoride, 501.
- Burgess, John. Kinetics of aquation of chloro- and thiocyanato-chromium(III) complexes in mixed aqueous solvents, 825.
- Burgess, John, Mekhail, Fikry M., and Gardner, E. Roy. Kinetics of aquation of tris(1,10-phenanthroline)iron(II) complexes in aqueous dioxan, 1335.
- Burgess, John, Peacock, Raymond D., and Petric, Alexander M. Kinetics of aquation of the hexabromorhenate(IV) and hexachlororhenate(IV) ions, 902.
- Burgess, John. See also Ault, John L., 1095, and Gardner, E. Roy, 1340.
- Burnett, Michael G., and Morrison, Robert J. Homogeneous catalytic and stoichiometric hydrogenation of ethylene by tris(hydrido)carbonylbis(triphenylphosphine)iridium(III), 632.
- Burnett, Michael G., Morrison, Robert J., and Strugnell, Christopher J. Mechanism of the homogeneous hydrogenation of olefins catalysed by chlorocarbonylbis(triphenylphosphine)iridium(I) with and without basic co-catalysts, 701.
- Burnham, Richard A., and Stobart, Stephen R. Trimethyl-(pentacarbonylmanganese)-silane, -germane, and -stannane: vibrational spectra and electron-impact studies, 1269.
- Busetto, Carlo, Cariati, Franco, Fantucci, Piercarlo, Galizzioli, Dario, and Morazzoni, Franca. Electronic and magnetic properties of the inactive form of the complex NN' -ethylenebis(salicylideneiminato)cobalt(II), and of five-co-ordinate complexes of cobalt(II) with Schiff's bases, 1712.
- Busetto, Carlo, Cariati, Franco, Fusi, Achille, Gullotti, Michele, Morazzoni, Franca, Pasini, Alessandro, Ugo, Renato, and Valenti, Venanzio. Optically active complexes of Schiff bases. Part II. Complexes of cobalt(II) with tetradentate Schiff bases and their reactivity with oxygen, 754.
- Butler, K. David. See Bancroft, G. Michael, 1694.
- Buxton, George V. See Ellis, J. David, 1724.
- Bycroft, Brian M., and Cotton, John D. Reactions of carbodiimides with palladium(II) compounds, 1867.
- Byerley, John J., Fouda, Safaa A., and Rempel, Garry L. Kinetics and mechanism of the oxidation of thiosulphate ions by copper(II) ions in aqueous ammonia solution, 889.
- Byers, William, and Williams, Robert J. P. Nuclear magnetic resonance spectra of dimeric cupric compounds, 555.

C

- Calabresi, C. See Orlandini, A. Bianchi, 1383.
- Calderazzo, F. See Floriani, C., 765.
- Calhoun, Harry P., Paddock, Norman L., and Trotter, James. Crystal and molecular structure of [octakisdimethylaminocyclotetraphosphazene]tetracarbonyltungsten, 2708.
- Calligaris, M., Nardin, G., and Randaccio, L. Steric effects in the reversible oxygenation of cobalt-Schiff-base-complexes. Part I. Crystal and molecular structure of the optically active and *meso*-forms of NN' -butylenebis(salicylideneiminato)cobalt(II), 419.

- Cameron, A. Forbes, Taylor, Derek W., and Nuttall, Robert H. Structural investigations of metal-nitrate complexes. Part VII. Crystal and molecular structure of aquodinitratobis(quinoline)cadmium(II), 2130.
- Cameron, T. Stanley, Prout, C. Keith, Rossotti, Francis J. C., and Steele, David. Crystal and molecular structure of bis(aminomethanesulphonato)copper(II), 1590.
- Structure and stability of carboxylate complexes. Part XIII. Crystal and molecular structure of aquobis-(NN-dimethylglycinato)copper(II) dihydrate, 2626.
- Cannas, M., Carta, G., and Marongiu, G. Crystal structures of thiocyanate polyaminecopper(II) complexes. Part I. Bis-(ethylenediamine)copper(II) thiocyanate perchlorate, 251.
- Canty, Alan J., Domingos, António J. P., Johnson, Brian F. G., and Lewis, Jack. The chemistry of polynuclear compounds. Part XXV. Some reactions of α -tetrahydridododecacarbonyltetraruthenium with cyclic olefins, 2056.
- Cardin, David J., Çetinkaya, Bekir, Çetinkaya, Engin, and Lappert, Michael F. Carbene complexes. Part I. Electron-rich olefins as a source of carbene complexes of platinum(II) and palladium(II); and some experiments with $(CF_3)_2CN_2$, 514.
- Cardin, David J., Çetinkaya, Bekir, Çetinkaya, Engin, Lappert, Michael F., Randall, Edward W., and Rosenberg, Edward. Carbene complexes. Part III. Carbon-13 nuclear magnetic resonance studies of carbene complexes of 1,3-diorganoimidazolidin-2-ylidenes, 1982.
- Cariati, Franco. See Busetto, Carlo, 754, 1712.
- Carlisle, Gene O., Crutchfield, Donald A., and McKnight, Maxey D. Magnetic properties of some *N*-(2-hydroxyphenyl)-2-hydroxy-1-naphthylmethyleneiminato-complexes of the oxovanadium(IV) ion, 1703.
- Carroll, Anthony P., Shaw, Robert A., and Woods, Michael. Phosphorus-nitrogen compounds. Part XXXVI. Alkylthio- and arylthio-cyclotetraphosphazetenes, 2736.
- Carroll, William E., and Lalor, Fergus J. Transition metal derivatives of aryl diazonium ions. Part II. Arylazo derivatives of substituted iron carbonyls, 1754.
- Carroll, William E., Deeney, Francis A., Delaney, John A., and Lalor, Fergus J. Ligand-variation studies on the Mössbauer effect in low-valency iron organometallic complexes: the $LF_2(CO)_4$ and $L_2Fe(CO)_3$ series, 718.
- Carta, G. See Cannas, M., 251.
- Carty, A. J. See Beran, G., 488.
- Casson, M. J. See Ball, M. C., 34.
- Cattalini, L. See Bandoli, G., 886.
- Cavasino, Francesco P., Di Dio, Emanuele, and Locanto, Giovanni. Relaxation kinetic study of monophthalatonickel(II) complex formation, 2419.
- Cecconi, Franco. See Midollini, Stefano, 681.
- Çetinkaya, Bekir, Çetinkaya, Engin, and Lappert, Michael F. Carbene complexes. Part II. Thermally-induced isomerisations of *trans*-platinum(II) and palladium(II) complexes and the chemistry of the *cis*- and *trans*-isomers, 906.
- Çetinkaya, Bekir, Lappert, Michael F., and McMeeking, John. Alkylideneamido-derivatives of metals and metalloids. Part V. Complexes of the late transition metals with $(CF_3)_2C=N^-$ as ligand, and a tautomeric hydrogen transfer from metal to ligand, 1975.
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- Çetinkaya, Bekir. See also Cardin, David J., 514, 1982.
- Çetinkaya, Engin. See Cardin, David J., 514, 1982, and Çetinkaya, B., 906.
- Chan, Lilian Y. Y., and Einstein, F. W. B. Crystal and molecular structure of octacarbonyl- μ -[1,2-bis(dimethylarsino)-3,3,4,4-tetrafluorocyclobutene]-dimanganese (*Mn-Mn*), 111.
- Chatt, Joseph, Crabtree, Robert H., Jeffery, Edward A., and Richards, Raymond L. The basic strengths of some di-nitrogen complexes of molybdenum(0), tungsten(0), rhenium(I), and osmium(II), 1167.
- Chatt, Joseph, Dilworth, J. R., and Leigh, G. Jeffery. Di-nitrogen complexes of rhenium(I) and rhenium(II), 612.
- Chatt, Joseph, Leigh, G. Jeffery, and Slade, Roger M. Rhodium(I), rhodium(III), palladium(II), and platinum(II) complexes containing ligands of the type PR_nQ_{3-n} ($n = 0, 1, \text{ or } 2$; $R = \text{Me, Et, Bu}^t, \text{ or Ph}$; $Q = CH_2OCOMe \text{ or } CH_2OH$), 2021.
- Chatt, Joseph, Richards, Raymond L., and Royston, Geoffrey H. D. Isonitrile complexes of osmium and their reactions to give hydride, amine, and carbene complexes, 1433.
- Chatt, Joseph. See also Bell, Bernard, 997.
- Cheetham, N. See Gilson, T. R., 291.
- Chieh, P. C. See Beran, G., 488.
- Chini, P. See Albano, V. G., 651.
- Chow, K. K., Halfpenny, M. T., and McAuliffe, C. A. Four- and five-co-ordinate nickel(II) complexes with *cis*-(2-diphenylarsinovinyl)diphenylphosphine and 9,10-bis(diphenylphosphino)phenanthrene, 147.
- Christopher, Roger E. See Adams, David M., 2298.
- Churchill, Melvyn Rowen, and Reis, Arthur H., jun. Structural studies on clathro-chelate complexes. Part III. Trigonal prismatic co-ordination of d^7 cobalt(II) in orthorhombic crystalline $\{[FB(ONCHC_6H_5N)_3P]Co^{II+}\} [BF_4^-]$, MeCN and a single-crystal transformation of unsolvated monoclinic $\{[FB(ONCHC_6H_5N)_3P]Co^{II+}\} [BF_4^-]$, 1570.
- Clare, Brian W., Kepert, David L., and Watts, Donald W. Rapid acidification of orthovanadate, 2476.
- Kinetic study of the acid decomposition of decavanadate, 2479.
- Acid decomposition of decavanadate: specific salt effects, 2481.
- Clark, David T., Briggs, David, and Adams, D. B. ESCA Studies of square-planar platinum complexes; correlations with nuclear quadrupole resonance studies, 169.
- Clark, David T. See also Briggs, David, 2143.
- Clark, E. Roy, Collett, Arnold J., and Naik, Dinker G. Tetraethyldithio-oxamide complexes of tellurium(IV), 1961.
- Clark, George R., Waters, Joyce M., and Whittle, Kenneth R. Crystal structure of the 1:1 adduct formed between bis-(*cis*-1,2-diphenylethylene-1,2-dithiolato)palladium and cyclohexa-1,3-diene, 821.
- Clark, James H., and Emsley, John. Proton magnetic resonance studies of fluoride and acetate solutions in glacial acetic acid. The shielding and thermodynamics of strong hydrogen bonds, 2154.
- Clark, Robin J. H. See Braunstein, Pierre, 1845.
- Clase, Howard J., Cleland, Andrew J., and Newlands, Michael J. A Raman spectroscopic study of the hydrogenation of aqueous pentacyanocobaltate(II), 2546.

- Clay, R. M., Murray-Rust, P., and Murray-Rust, Judith. Crystal structure of tris(trimethylammonium) *catena*-tri- μ -chloro-cuprate(1-) tetrachlorocuprate(2-), 595.
- Clegg, W., and Wheatley, P. J. Crystal structure of μ -(2,2':6',2''-terpyridylcadmium)-bis(pentacarbonylmanganese)(2Cd-Mn), 90.
- Cleland, Andrew J. See Clase, Howard J., 2546.
- Clemens, John, Green, Michael, and Stone, F. Gordon A. Reactions of low-valent metal complexes with fluorocarbons. Part XXIV. Chloronitrosylbis(triphenylmethyl)diphenyl- and dimethylphenyl-phosphine)ruthenium and nitrosyltris(triphenylphosphine)iridium. Part XXVII. Zerovalent nickel, palladium, and platinum, and iridium(I), palladium(II), and platinum(II) complexes with bis(trifluoromethyl)diazomethane, 375, 1620.
- Clement, D. A., and Nixon, J. F. Fluorophosphine complexes of rhodium(I). Part III. Ligand-exchange studies in some dimethylaminodifluorophosphinerhodium(I) complexes, 195.
- Clemente, Dore A. See Bandoli, Giuliano, 886, 2331.
- Coates, G. E., Smith, D. L., and Srivastava, R. C. *t*-Butylberyllium-alkyls and -aryls: amine complexes and pyrolysis to hydrides, 618.
- Cockburn, B. N., Howe, D. V., Keating, T., Johnson, Brian F. G., and Lewis, J. Reactivity of co-ordinated ligands. Part XV. Formation of complexes containing Group V donor atoms and metal-carbon σ -bonds, 404.
- Coggon, Philip, and McPhail, Andrew T. Crystal and molecular structure of 1-benzylphosphole by X-ray analysis, 1888.
- Cohen, Stuart C. Syntheses and reactions of bromotetrafluorophenyl(cyclopentadienyl)dicarbonyliron derivatives, 553.
- Coles, Brian R. See Nolan, Kevin B., 2503.
- Coletta, Flaviano, Ettorre, Renato, and Gambaro, Alessandro. Proton nuclear magnetic resonance behaviour of acetylacetonato(chloro)-2-chloromethylpyridineplatinum(II), 684.
- Collamati, Ines. See Alessandrini, Saverio, 2409, Astolfi, Rosalba, 2238, and Attanasio, Donato, 2242.
- Collett, Arnold J. See Clark, E. Roy, 1961.
- Collier, M. R., Lappert, Michael F., and Pearce, R. Silylmethyl and related complexes. Part I. Kinetically stable alkyls of titanium(IV), zirconium(IV), and hafnium(IV), 445.
- Collins, Paul H. See Webster, Michael, 588.
- Connelly, Neil G. Cationic carbonylnitrosyl complexes of molybdenum and tungsten, 2183.
- Connor, Joseph A., and Jones, E. Malcolm. Rearrangement of metal-stabilised carbocations containing cyclopropyl and other alkyl groups to give cyano- and isocyanocomplexes: reactions of Group VI metal isocyanocomplexes with nucleophiles, 2119.
- Connor, Joseph A., Day, J. P., Jones, E. Malcolm, and McEwen, G. K. Preparation and some reactions of Group VI metal monodentate bisphosphine carbonyl complexes. Mechanistic aspects of chelate-ring formation, 347.
- Connor, Joseph A. See also Lloyd, Malcolm K., 1743, 1768.
- Contreras, J. Guillermo, Poland, John S., and Tuck, Dennis G. Co-ordination compounds of indium. Part XXII. Anionic complexes derived from the lower halides of indium, 922.
- Cook, Donald F., and Curtis, Neil F. Some metal-ion complexes with ligands formed by reaction of amines with aliphatic carbonyl compounds. Part III. Some compounds formed by reaction of 1,3-diaminopropane nickel(II) compounds with acetone, 1076.
- Cook, Donald F., Curtis, Neil F., and Hay, Robert W. Metal ion complexes of 5,12-dimethyl-7,14-diphenyl-1,4,8,11-tetra-azacyclotetradeca-4,11-diene. Part I. Some nickel(II) and copper(II) compounds, 1160.
- Cook, Philip M., Dahl, Lawrence F., Hopgood, David, and Jenkins, Roger A. Oxidative-addition reaction of platinum acetylacetonate with iodine in solid state and solution. Crystal structure and equilibrium studies of *trans*-bis(acetylacetonato)di-iodoplatinum(IV), 294.
- Cooper, Howard. See Bagnall, Kenneth W., 2682.
- Copperthwaite, R. G. See Alyea, E. C., 185, and Bradley, D. C., 191.
- Corradi, A. Bonamartini, Palmieri, C. Grasselli, Nardelli, M., Pellinghelli, M. A., and Tani, M. E. Vidoni. Crystal and molecular structure of potassium *cis*-bis(iminodiacetato)cobaltate(III)-2.5 water, 655.
- Corrie, Anna M., Touche, Murray L. D., and Williams, David R. Thermodynamic considerations in co-ordination. Part XIV. Formation constants for lead(II)-amino-acid complexes and their use in computing the complexing competition between lead(II) and *in vivo* essential metal ions, and in computer evaluation of ligands currently employed as lead(II) chelating therapeutics, 2561.
- Costa, G. See Pelliza, G., 317.
- Costa, Giacomo, Puxeddu, A., and Reisenhofer, E. Reactions of cobalt(I) complexes with ammonium and sulphonium ions and organic halides, 2034.
- Cotton, John D. See Bycroft, Brian M., 1867.
- Cotton, S. A. See Bradley, D. C., 191.
- Coulson, D. Robert. Aromatic substitution reactions of an arylplatinum(IV) complex, 2459.
- Court, T. L., and Dove, M. F. A. Fluorine compounds of nickel(III), 1995.
- Cox, Alan. See Ali, Latif H., 1468, 1475, and Allen, David M., 1899.
- Crabtree, Robert H. See Chatt, Joseph, 1167.
- Cradock, Stephen, Ebsworth, E. A. V., and Robertson, A. Photoelectron spectra of some silyl and germyl transition-metal carbonyls and related species, 22.
- Cradock, Stephen, Ebsworth, E. A. V., and Whiteford, R. Alastair. Photoelectron spectra of some simple fluorosilanes, 2401.
- Cradwick, M. Elizabeth. See Gunawardane, Richard P., 2397.
- Cragg, Richard H., and Weston, Alan F. Boron-sulphur compounds. Part VI. Organoboron compounds of cysteamine (2-aminoethanethiol), 1054.
- Cragg, Richard H., Husband, J. P. N., and Weston, Alan F. Boron-sulphur compounds. Part IV. Synthesis, reactions, and mass spectral studies of some substituted 4-methyl-1,3,2-dithiabborolans, 568.
- Crea, Joseph, and Lincoln, Stephen F. Proton magnetic resonance study of the exchange of trimethyl phosphate on the tetrakis(trimethyl phosphato)beryllium(II) complex, 2075.
- Crease, Allan E., and Legzdins, Peter. The Lewis acidity of organolanthanides. The interaction of cyclopentadienyl-lanthanides with some carbonyl and nitrosyl complexes, 1501.

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- Croatto, Ugo. See Bandoli, Giuliano, 2331.
- Crookes, John V., and Woolf, Alfred A. Competitive interactions in the complexing of ethylene with silver(I) salt solutions, 1241.
- Crossman, J. M., Haszeldine, R. N., and Tipping, A. E. Organosilicon chemistry. Part X. The reaction of diazomethyltrimethylsilane with trifluoroacetonitrile and cyanogen halides to give triazoles, 483.
- Crutchfield, Donald A. See Carlisle, Gene O., 1703.
- Cummins, Diane, Higson, B. M., and McKenzie, E. Donald. Cobalt(III) compounds of carbanions and their reactivity. Part I. The preparations and structure of some malononitrilato-compounds, 414.
- The mixed ligand cobalt(III) compounds of β -diketonates and quadridentate dianion Schiff bases, 1359.
- Curtis, Michael T. See Allen, Geoffrey C., 1675.
- Curtis, Neil F. Some metal-ion complexes with ligands formed by reaction of amines with aliphatic carbonyl compounds. Part II. Some nickel(II) and copper(II) compounds formed by the 1,2-diaminopropane-acetone reaction, 863.
- Metal-ion complexes of 5,12-dimethyl-7,14-diphenyl-1,4,8,11-tetra-azacyclotetradeca-4,11-diene. Part II. Some compounds of cobalt(III), 1212.
- Curtis, Neil F., McCormick, I. Ross N., and Waters, T. Neil. Crystal and molecular structures of μ -oxalato-di[bis-ethylenediaminenickel(II)] dinitrate, μ -oxalato-bis[di(2-aminoethyl)aminecopper(II)] diperchlorate, and μ -oxalato-bis[di-(3-aminopropyl)aminezinc(II)] diperchlorate, 1537.
- Curtis, Neil F., Swann, David A., and Waters, T. Neil. Structural studies on co-ordinated macrocyclic ligands. Part II. Crystal and molecular structure of acetylacetonato-C-meso-(5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane)nickel(II) perchlorate. Part III. Preparations and crystal structure analyses of salts of the nickel(II) complex C-rac-5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane, $[\text{Ni}(\text{tetb})]^{2+}$, in the α -, β -, and γ -configurations, 1408, 1963.
- Curtis, Neil F. See also Cook, Donald F., 1076, 1160.
- Cusachs, L. Chopin. See Wheelock, Kenneth S., 1457.
- Curtilla, D. See Žmikić, A., 1284.
- Czapski, G. See Samuni, A., 487.
- Dahl, Lawrence F. See Cook, Philip M., 294.
- Dallavalle, Francesco. See Braibanti, Antonio, 323, 2539.
- Dalton, J. See Hill, W. E., 143.
- Daly, John J., and Sanz, Francisco. Crystal and molecular structure of 2,6,8-triphenyl-2,4,6-trithioxo-1,3,5,2,4,6-trioxatriphosphorinan, 2032.
- Crystal and molecular structure of 3,7-dihydro-1,1,3,3,5,5,7,7-octamethyl-1H,5H-benzo[1,2-c:4,5-c']-bis[1,2,5]oxadisilole, 2474.
- Daly, John J., Sanz, Francisco, Sneed, Raymond P. A., and Zeiss, Harold H. Crystal and molecular structure of *cis*-diphenylbis-(2,2'-bipyridyl)chromium(III) iodide, 73.
- Crystal and molecular structure of bis[(trimethylsilyl)methyl]bis-(2,2'-bipyridyl)chromium(III) iodide, 1497.
- Daly, John J. See also Sanz, Francisco, 511.
- da Mota, M. Mannela. See McCleverty, Jon A., 2571.
- Dann, Peter E. See Bullen, Graham J., 1453.
- Dapporto, P. See Bianchi, A., 641.
- Darling, J. H., and Ogden, J. S. Spectroscopic studies on matrix-isolated metal carbonyls. Part II. Infrared spectra and structures of $\text{Pd}(\text{CO})_4$, $\text{Pd}(\text{CO})_3$, $\text{Pd}(\text{CO})_2$, and PdCO , 1079.
- Darragh, John I., Haran, Gerald, and Sharp, David W. A. *trans*-Chlorotetrafluoro(trifluoromethyl)sulphur and its reactions with olefins and acetylenes, 2289.
- Dart, James W., Lloyd, Malcolm K., Mason, Ronald, and McCleverty, Jon A. Isocyanide complexes of rhodium and iridium. Part I. Tetrakis(isocyanide) species, their oxidative addition reactions, and some allyl complexes. Part II. Four- and five-co-ordinate complexes containing tertiary phosphines, and some oxidative addition reactions, 2039, 2046.
- Dart, James W., Lloyd, Malcolm K., Mason, Ronald, McCleverty, Jon A., and Williams, John. Properties of isocyanide ligands in metal complexes. Characterisation and voltammetric properties of bis(tertiary phosphine)-tris(isonitrile)cobalt(I) complexes, 1747.
- Das, Rabindranath N., Shaw, Robert A., Smith, Barry C., and Woods, Michael. Phosphorus-nitrogen compounds. Part XXXIV. The reactions of hexachlorocyclotriphosphazatriene with ethylamine: comparisons with isopropylamine and *t*-butylamine, 709.
- Das, Sunilkumur, Shaw, Robert A., and Smith, Barry C. Phosphorus-nitrogen compounds. Part XXXV. Friedel-Crafts reactions of chlorodimethylaminocyclotriphosphazatrienes with benzene, 1883.
- Davidson, J. L., and Sharp, D. W. A. Metal perfluoro-alkyl- and -aryl-thiolates. Part II. Molybdenum, tungsten, manganese, iron, and nickel derivatives, 1957.
- Davies, Geoffrey, and Warnqvist, Björn. Confirmation of the non-existence of polymeric species in aqueous perchloric acid solutions of the hexa-aquocobalt(III) ion, 900.
- Davies, John E., Gatehouse, Bryan M., and Murray, Keith S. Crystal and molecular structure and magnetic properties of *catena*- μ -acetato-[*NN'*-ethylenebis(salicylaldiminato)]manganese(III). A linear-chain complex containing a single *anti-anti* acetate bridge, 2523.
- Davies, N., Wallbridge, M. G. H., Smith, B. E., and James, B. D. Vibrational spectra of zirconium tetrahydroborate and related molecules, 162.
- Davis, Reg. See Alsop, John E., 1686.
- Day, J. P. See Connor, J. A., 347.
- Day, Peter, DiSipio, Lorenzo, Ingletto, Giulio, and Oleari, Luigi. Crystal lattice effects on the electronic spectrum of the manganate ion, 2595.
- Dean, Christopher R. S., Finch, Arthur, and Gardner, Peter J. The aqueous solubilities of nitrogen trifluoride and dinitrogen tetrafluoride, 2722.
- de Beer, Jacob A., Haines, Raymond J., Greatrex, Robert, and Wyk, Jan A. van. Reactions of metal carbonyl derivatives. Part XV. Oxidation studies of some η -cyclopentadienyl bridging sulphido- and phosphino-derivatives of iron, 2341.
- Deeming, Antony J., and Underhill, Mark. Carbon-hydrogen cleavage reactions of some trimethyl- and triethylphosphine complexes of osmium, 2727.
- Deeming, Antony J., Johnson, Brian F. G., and Lewis, Jack. Some insertion reactions of platinum hydrido-complexes with olefins: hydrolysis of platinum-carbon σ -bonds, 1848.

- Deeming, Antony J., Kimber, Richard E., and Underhill, Mark. Some benzyne complexes of osmium derived from dimethylphenylphosphine or dimethylphenylarsine, 2589.
- Deeney, Francis A. See Carroll, William E., 718.
- Degetto, S. See Graziani, R., 451.
- Dehnicke, Kurt, and Wilson, Ian L. Pseudohalide complexes of trialkylgallium(III), 1428.
- DeKock, R. L., and Lloyd, D. R. The He^I photoelectron spectrum of sulphur trioxide, 526.
- Delaney, John A. See Carroll, William E., 718.
- Delbaere, L. T. J., Kruczynski, L. J., and McBride, D. W. X-Ray structure determination of a new metal cluster complex: di- μ_3 -arsino-tris(tricarbonyliron)(3Fe-Fe), 307.
- de Meester, Patrice, and Skapski, Andrzej C. Crystal structure of dibromodienadeniniumcopper(II) dibromide: a complex with unidentate adenine, 424.
- X-Ray molecular structure of *cyclo*-bis-(μ -acetato- μ -nitrosyl)-bis[di- μ -acetato-diplatinum(II)]; a tetranuclear complex containing both nitrosyl and acetate bridges, 1194.
- X-Ray crystal structure of bis(adeninium) *trans*-bis-(adenine)tetra-aquocobalt(II) bis(sulphate) hexahydrate: a complex of unidentate adenine containing adenine-adeninium hydrogen-bonded pairs, 1596.
- de Meester, Patrice, Fletcher, Steven R., and Skapski, Andrzej C. Refinement of the crystal structure of tetra- μ -acetato-bisaquodocopper(II), 2575.
- Desjardins, C. David, and Passmore, Jack. Reaction of tetrafluoroethylene with Se₈(AsF₆)₂ and Se₈(Sb₂F₁₁)₂. Preparation of bis(pentafluoroethyl) triselenide and perfluoroethyldiselenylperfluoroacetyl fluoride, 2314.
- Dessy, Giulia. See Bonamico, Mario, 876.
- Dewan, John C., and Kepert, David L. Rapid acidification of solutions containing tungstate anions, 224.
- Dewan, John C., Kepert, David L., Raston, Colin L., Taylor, Donald, White, Allan H., and Maslen, Edward N. Crystal structures of tris(NN-diethylthiocarbamate)oxo-niobium(V) and -vanadium(V), 2082.
- Dewar, Michael J. S., Patterson, Dennis B., and Simpson, W. Irven. A study of bonding in some organoaluminium compounds by ²⁷Al nuclear quadrupole resonance spectroscopy, 2381.
- Dickens, P. G., and Neild, D. J. Thermochemistry of oxide bronzes. Part II. Sodium tungsten bronzes Na_xWO₃ ($x = 0.53$ and 0.77), 1074.
- Dickens, P. G., Jewess, M., Neild, D. J., and Rose, J. C. W. Thermochemistry of oxide bronzes. Part I. Sodium vanadium bronzes Na_xV₂O₆ with x between 0.2 and 0.33, 30.
- Di Dio, Emanuele. See Cavasino, Francesco P., 2419.
- Dillon, Keith B., and Rossotti, Francis J. C. Structure and stability of carboxylate complexes. Part XII. The location of co-ordination sites in copper(II) carboxylates in solution by proton magnetic resonance, 1005.
- Dilworth, J. R. See Chatt, J., 612.
- DiSipio, Lorenzo. See Day, Peter, 2595.
- Dixon, Keith R., Moss, Kenneth C., and Smith, Martin A. R. Synthesis and fluorine-19 nuclear magnetic resonance spectra of trifluoromethylthio-complexes of platinum, palladium, nickel, and iridium, 1528.
- Djordjević, Cirila. See Vuletić, Nikola, 550, 1137.
- Djurić, Gordana. See Gal, Ivan J., 2066.
- Dobbie, Robert C., and Mason, Peter R. Reactions of a terminal phosphido-group in an organo-iron complex. Part I. Some oxygen, sulphur, and selenium derivatives, 1124.
- Dobbie, Robert C., and Straughan, Brian P. Vibrational spectra of fluorocarbon-Group V derivatives. Part III. The compounds (CF₃)₂PX where X = halogen or hydrogen, 2754.
- Dobbie, Robert C., and Whittaker, David. Reactions of bis(trifluoromethyl)phosphine with some organocobalt complexes, 2427.
- Dobbie, Robert C. See also Brown, J. David, 1691.
- Dobson, Christopher M., Williams, Robert J. P., and Xavier, Antonio V. Separation of contact and pseudo-contact contributions to shifts induced by lanthanide(III) ions in nuclear magnetic resonance spectra, 2662.
- Dodd, David, and Johnson, Michael D. σ -Bonded organo-transition-metal ions. Part XIV. Characterisation of monomeric and bridged anionic complexes of organocobaloximes, 1218.
- Dolby, Rex, and Robinson, Brian H. Chemistry of methyl-*in*trigobalt enneacarbonyls. Part IX. Reactions with Grignard and organolithium reagents, 1794.
- Dollimore, L. S., and Gillard, R. D. Optically active co-ordination compounds. Part XXXII. Potassium (+)-tris-[L-cysteinesulphinato(2-)-SN]-cobaltate(III): a versatile agent for resolution of 3+ species, 933.
- Domingos, António J. P. See Canty, Alan J., 2056.
- Donaldson, John D., Laughlin, David, Ross, Sidney D., and Silver, Jack. Phases obtained from the frozen molten systems caesium-tin-halide and caesium-lead-halide, 1985.
- Donaldson, John D., Nicholson, David G., Puxley, David C., and Howie, R. Alan. Structure and bonding in sulphato-bis(thiourea)tin(II), 1810.
- Donaldson, John D., and Silver, Jack. The Mössbauer effect in tin(II) compounds. Part XIII. Data for the products from molten caesium-tin(II)-halide systems, 666.
- Dori, Zvi. See Spivack, Bruce, 1173.
- Douglas, Philip G., and Shaw, Bernard L. Some reactions of dimethyl(1-naphthyl)phosphine with ruthenium and osmium compounds, 2078.
- Dove, M. F. A. See Court, T. L., 1995.
- Drake, John E. See Anderson, John W., 1716.
- Drakesmith, A. J., and Whyman, R. A high-pressure infrared spectral study of the reactions of phosphine-substituted derivatives of tetrairidium dodecacarbonyl with carbon monoxide and hydrogen, 362.
- Drew, Michael G. B., and Riedl, Michael J. Crystal and molecular structure of μ -[1,2-bis(phenylthio)ethane]-bis[chlorogold(I)], 52.
- Drew, Michael G. B., and Wilkins, John D. Crystal and molecular structure of 2,2'-bipyridyldichloro(trimethyl)tantalum(V), 1830.
- Crystal and molecular structure of dicarbonylchlorobis-[*o*-phenylene(dimethylarsino)]molybdenum(II) triiodide-bischloroform, 2664.
- Drew, Michael G. B., Nelson, S. Martin, and Sloan, Malcolm. Crystal and molecular structure of di- μ -chloro-tetrakis-(4-methylpenta-1,3-diene)dirhodium(I), 1484.
- Drew, Michael G. B. See also Beaver, John A., 1376, and Nelson, S. Martin, 2195.
- Dudley, Richard J., Fereday, R. J., Hathaway, Brian J., Hodgson, Peter G., and Power, Paedar C. Single-crystal electronic and electron spin resonance spectra of the two forms of bis(nitrato)bis-(α -picoline)copper(II) and of bis(nitrato)mono(pyrazine)copper(II), 1044.

Dunphy, Richard F., Lau, Clement, Lynton, Harry, and Passmore, Jack. Crystal structure of chlorodifluoro-oxosulphur(vi) hexafluoroarsenate(v) $\text{OSClF}_2 \cdot \text{AsF}_6^-$, 2533.

Dunster, M. O. See Abel, E. W., 98.

du Preez, Jan G. H. See Bagnall, Kenneth W., 2682.

E

Eaborn, Colin, Tune, David J., and Walton, David R. M. Stereochemistry of the formation and cleavage of silicon-platinum bonds, 2255.

Eachus, Raymond S. See Booth, Robert J., 2233.

Ebsworth, E. A. V., and Leitch, Diana M. Reactions of silanes and germanes with iridium complexes. Part I. Reactions with Vaska's compound, 1287.

Ebsworth, E. A. V. See also Anderson, Duncan W. W., 854, 2370, and Cradock, Stephen, 22, 2401.

Edwards, Anthony J., and Taylor, Peter. Fluoride crystal structures. Part XXI. Trifluorotellurium(iv) μ -fluoro-bis[pentafluoroantimonate(v)], 2150.

Edwards, Dennis A., and Richard, Roger. Copper(i) carboxylates: preparations and infrared and mass spectral features, 2463.

Edwards, John. See Alvey, Peter J., 2308.

Edwards, Julian D., Foong, Siew-Wan, and Sykes, A. Geoffrey. Reactions of μ -hydroxo-dicobalt(iii) complexes. Part X. Kinetic studies of the reaction of the μ -amido- μ -hydroxo-bis[tetra-amminecobalt(iii)] complex with phosphate ions in aqueous perchloric acid solutions and the characterisation of the μ -amido- μ -phosphato-bis[tetra-amminecobalt(iii)] complex, 829.

Einstein, F. W. B., and Sutton, D. Models for the interaction of nitrogen with transition metals. Part II. Crystal and molecular structure of carbonylchloro(4-fluorophenyl)di-imide-2C,N')bis(triphenylphosphine)-iridium(iii) tetrafluoroborate acetone solvate, 434.

Einstein, F. W. B., Gilbert, M. M., and Tuck, D. G. Crystal structure of acetato(dimethyl)indium(iii), 248.

Einstein, F. W. B. See also Chan, Lilian Y. Y., 111.

Ellis, Ian A. See Allan, Mellis, 2675, and Aylett, Bernard J., 83, 981, 1523.

Ellis, J. David, and Sykes, A. Geoffrey. Kinetic studies on the vanadium(ii)-titanium(iv) and titanium(iii)-vanadium(iv) redox reactions in aqueous solutions, 537.

Kinetics of the reaction between titanium(iii) and vanadium(v), 2553.

Ellis, J. David, Green, Mark, Sykes, A. Geoffrey, Buxton, George V., and Sellers, Robin M. Pulse radiolysis of titanium(iii) and other metal(iii) ions in the presence of formic acid, 1724.

Ellis, Keith J., and McAuley, Alexander. Metal-ion oxidations in solution. Part IX. Characterisation of the intermediate formed in the oxidation of thiomalic acid by iron(iii) ions, 1533.

Emsall, H. D. See Browning, J., 381.

Emsley, John, and Williams, John K. The phosphorus-nitrogen bond. Synthesis, characterization, and infrared studies of heterocyclic phosphoryl (phosphetan) amides, 1576.

Emsley, John, Middleton, Trevor B., and Williams, John K. Preparation and properties of 1-bromo-2,2,3,4,4-pentamethylphosphetan 1-oxide, $\text{C}_5\text{H}_{10}\text{P}(\text{O})\text{Br}$, and a comparison with the chloro-compound; hydrolysis of these to the anhydride and acid. Vibrational spectra, 2701.

Emsley, John. See also Ardrey, Robert E., 2641, and Clark, James H., 2154.

Ercolani, Claudio. See Alessandrini, Saverio, 2409, Astolfi, Rosalba, 2238, and Attanasio, Donato, 2242.

Ettore, Renato. See Coletta, Flaviano, 684.

Evans, Christopher A., Tan, Kang Hai, Tapper, Spencer P., and Taylor, Michael J. Vibrational spectra and metal-metal bonding in the hexahalogenodigallate(ii) ions, $\text{Ga}_2\text{X}_6^{2-}$ (X = Cl, Br, and I), 988.

Evans, D. F. Magnetic titrations by a nuclear magnetic resonance method, 2587.

Evans, Dennis F., and Phillips, Raymond F. Fluorine resonance spectra of pentafluorophenyl-zinc and -cadmium halides, 978.

Evans, I. P., Spencer, A., and Wilkinson, G. Dichlorotetrakis(dimethyl sulphoxide)ruthenium(ii) and its use as a source material for some new ruthenium(ii) complexes, 204.

F

Fabrizzi, Luigi. See Barbucci, Rolando, 1763.

Fachinetti, G. See Floriani, C., 765, 1954.

Fallani, G. See Bianchi, A., 641.

Fantucci, Piercarlo. See Busetto, Carlo, 1712.

Faraone, F., Piraino, P., and Pietropaolo, R. Four-coordinate cationic dicarbonyl(phosphine)iridium(i) complexes obtained from chlorotricarbonyliridium, 1625.

Fares, Vincenzo. See Bonamico, Mario, 876.

Fenger, Jes, Siekierska, Krystyna E., and Olsen, J. After effects of the cobalt-57-iron-57 electron-capture reaction in hexacyanocobaltate(iii) complexes, 563.

Fenger, Jes. See also Siekierska, Krystyna E., 1086.

Fenton, David E. Alkali-metal complexes of phenacyl kojate (5-phenacyloxy-2-hydroxymethyl-4H-pyran-4-one), 1380.

Fenton, David E., Nave, Colin, and Truter, Mary R. Anionic hexafluoroacetylacetonato complexes of alkali and other metals and the crystal structure of dirubidium tris(hexafluoroacetylacetonato)sodato, 2188.

Fereday, R. J. See Dudley, Richard J., 1044.

Ferguson, G. See Jeffreys, J. A. D., 749.

Fernández, Héctor, Grotewold, Juan, and Previtali, Carlos M. Thermal decomposition of diborane. Part I. The decomposition mechanism at low conversion and temperature and the inhibiting effect of accumulated hydrogen, 2090.

Fernando, W. Sumanasiri. See Adams, David M., 410, 2264.

Fernandopulle, Mary E. See Barnard, Paul F. B., 2172.

Ferraris, Giovanni, and Gervasio, Giuliana. Crystal and molecular structure of heptacarbonyl- μ_2 -diphenylacetylene- μ -(1,2,3,4-tetraphenylbutadiene-1,4-diyl)-triangulo-triosmium, 1933.

Ferraris, Giovanni, Jones, Derry W., and Yerkess, Jack. Refinement of the crystal structure of magnesium sulphate heptahydrate (epsomite) by neutron diffraction, 816.

Field, Ross Anthony, Kepert, David L., Robinson, Bruce William, and White, Allan Henry. Crystal structure of bis[hydroxo(triphenyl)arsonium(v)] dodeca- μ -chloro-hexachloro-octahedro-hexaniobate(2-), 1858.

- Figgis, B. N., Wadley, L. G. B., and Gerloch, M. Magnetic anisotropy and structure of hexa(urea)titanium salts, 238.
- Finch, A. See Anthoney, Martin E., 659.
- Finch, Arthur, Gardner, Peter J., Hill, Norman, and Hussian, Khawaja S. The thermochemistry of *o*- and *p*-tolylidichloroboranes and the boron-to-carbon bond strength, 2543.
- Finch, Arthur, Gates, Peter N., and Jenkinson, Michael A. Thermochemistry of fluorine compounds. Part II. The hexafluoriodate series. Part III. Iodine oxide tri-fluoride and iodyl fluoride, 2237, 2725.
- Finch, Arthur, Gates, Peter N., Ryan, F. J., and Bentley, F. F. Mixed halogen complexes of phosphorus. Part I. Preparation and Raman spectra of the chlorobromophosphonium ions, $[\text{PCl}_n\text{Br}_{4-n}]^+$ ($0 \leq n \leq 4$), 1863.
- Finch, Arthur. See also Dean, Christopher R. S., 2722.
- Fitzsimmons, Brian W., Smith, Anthony W., Larkworthy, Leslie F., and Rogers, Keith A. Transition metal-Schiff base complexes. Part VI. Mössbauer and magnetic investigations of some iron(II) and iron(III) systems, 676.
- Flamini, Alberto. See Furlani, Claudio, 2404.
- Fletcher, Steven R. See de Meester, Patrice, 2575.
- Flint, C. D., Greenough, P., and Matthews, A. P. Solid-state photochemical and energy-transfer processes in some hexa-amminechromium(III) salts, 368.
- Floriani, C., and Fachinetti, G. New synthesis and isocyanocomplexes of chloro(π -cyclopentadienyl)titanium(III), 1954.
- Floriani, C., Fachinetti, G., and Calderazzo F. Quinone adducts of cobalt(II) and iron(II) complexes with a quadridentate Schiff's base, 765.
- Foong, Siew-Wan, and Sykes, A. Geoffrey. Reactions of μ -hydroxo-dicobalt(III) complexes. Part IX. Equilibrium and kinetic studies of the reaction of the μ -amido- μ -hydroxo-bis[tetra-amminecobalt(III)] complex with selenate ions in aqueous perchloric acid solutions, and characterisation of the μ -amido- μ -selenato-bis[tetra-amminecobalt(III)] complex, 504.
- Foong, Siew-Wan. See also Edwards, Julian D., 829, and Scott, Keith L., 2335.
- Ford-Smith, M. H., and Habeeb, J. J. Kinetics of oxidation-reduction reactions between elements of Groups V and VII. Part I. Bismuth(V) with halide ions and other reductants, 461.
- Ford-Smith, M. H. See also Adegite, A., 134, 138.
- Forsellini, E. See Graziani, R., 451.
- Fouda, Safaa A. See Byerley, John J., 889.
- Fowles, Gerald W. A., Moss, Kenneth C., Rice, David A., and Rolfe, Nicholas. Oxidation and reduction of some tungsten, molybdenum, and vanadium chlorides by chlorinated alkyl cyanides, 1871.
- Fowles, Gerald W. A., Rice, David A., and Wilkins, John D. Reaction of dimethylzinc with tantalum(V) chloride and some co-ordination compounds of methyltantalum(V) chloride, dimethyltantalum(V) chloride, and methyl-niobium(V) chloride, 961.
- Fraser, C. J. W. See Burgess, J., 501.
- Frazer, M. J., and Haines, L. I. B. Iron-59 tracer study of the reaction between iron(III) chloride and quinolin-8-ol to give the chlorobis(quinolin-8-olato)iron(III) complex, 115.
- Frisch, P. Douglas, Lloyd, Malcolm K., McCleverty, Jon A., and Seddon, Duncan. Electrochemical oxidation of thio-bridged binuclear π -cyclopentadienyl complexes of molybdenum, iron, cobalt, and nickel, 2268.
- Fritchie, Charles J., jun. See Benno, Robert H., 543.
- Fuger, J., and Brown, D. Thermodynamics of the actinide elements. Part IV. Heats and free energies of formation of the tetrachlorides, tetrabromides, and tetraiodides of thorium, uranium, and neptunium, 428.
- Fuller, Michael W. See Bridgert, Glenn J., 1274.
- Funabiki, Takuzo, Mohri, Michihiro, and Tarama, Kimio. Hydrogenation by cyanocobaltate. Part III. Kinetic and deuterium tracer studies of the mechanism of the hydrogenation of *trans*-1-phenylbuta-1,3-diene catalysed by pentacyanocobaltate(II), 1813.
- Furlani, Claudio, Flamini, Alberto, Sgamellotti, A., Bellitto, Carlo, and Piovesana, Olivo. Electronic spectral studies of dithio- and perthio-carboxylato-nickel(II) complexes, 2404.
- Furness, Alan R. See Ainscough, Eric W., 2360.
- Fusi, Achille. See Busetto, Carlo, 754.
- Fusina, L. See Biscarini, P., 159.

G

- Gal, Ivan, J., Djurić, Gordana, and Melovski, Ljiljana. Solubility of silver chloride and silver bromide and their complexes in anhydrous calcium nitrate-potassium nitrate (1/1.9) melt, 2066.
- Gale, Rodney, and McCaffery, Anthony J. Bonding studies from charge-transfer absorption and magnetic circular dichroism spectra. Part II. The complex hexacyanoferrate(III) and pentacyanoferrate(III) complexes of C_{4v} symmetry, 1344.
- Galizzioli, Dario. See Busetto, Carlo, 1712.
- Gambaro, Alessandro. See Coletta, Flaviano, 684.
- Gardiner, Derek J. See Burdett, Jeremy K., 1928.
- Gardner, E. Roy, Mekhail, Fikry M., Burgess, John, and Rankin, Jennifer M. Kinetics of aequation of the complex tris[3-(2-pyridyl)-5,6-bis(4-phenylsulphonato)-1,2,4-triazine]iron(II) and its reactions with hydroxide, cyanide, and peroxodisulphate ions, 1340.
- Gardner, E. Roy. See also Burgess, John, 1335.
- Gardner, Margaret. Infrared and Raman spectra of some phosphorus sulphides, 691.
- Gardner, Margaret, and Rogstad, Astri. Infrared and Raman spectra of cycloheptasulphur, 599.
- Gardner, Peter J. See Anthoney, Martin E., 659, Dean, Christopher R. S., 2722, and Finch, Arthur, 2543.
- Gardner, Richard C. F. See Bennett, Ronald L., 2653.
- Gatehouse, B. M., and Lloyd, D. J. Crystal structure of anhydrous potassium carbonate, 70.
- Gatehouse, Bryan M. See Davies, John E., 2523.
- Gates, Peter N. See Finch, Arthur, 1863, 2237, 2725.
- Gateogno, Daniela, and Giuliani, Anna M. Substituted thioureas. Part II. Trimethylthiourea and its complexes with cobalt(II) and halogens, 1646.
- Gateogno, Daniela, Giuliani, Anna M., Bossa, Mario, and Ramunni, Girolamo. Substituted thioureas. Part I. Study of trimethylthiourea and its complexes with zinc(II), 1399.
- Gatteschi, Dante. See Bertini, Ivano, 1644.
- Gause, Edward H. See Mague, Joel T., 2578.
- Gearhart, R. C., Brill, T. B., Welsh, W. A., and Wood, R. H. Crystal structure of 4-chloropyridinium hexachlorostannate(IV), 359.
- Geibel, J. See Kubota, Mitsuru, 1267.
- Gellatly, Barry, J. See Barnard, Robert, 604.

- George, Raymond D., Knox, Selby A. R., and Stone, F. Gordon A. Chemistry of the metal carbonyls. Part LXVI. Complexes derived from a carbonyl osmium anion, 972.
- Georgiou, Denis. See Brown, Charles K., 929.
- Gerloch, M. See Figgis, B. N., 238.
- Gervasio, Giuliana. See Ferraris, Giovanni, 1933.
- Ghilardi, C. A. See Bianchi, A., 641, and Orlandini, A. Bianchi, 1383.
- Ghotra, Joginder S. See Bradley, Donald C., 1021.
- Gibb, Terence C., Greatrex, Robert, Greenwood, Norman N., and Kaspi, Panos. Ruthenium-99 Mössbauer studies of the magnetic properties of ternary and quaternary ruthenium(IV) oxides, 1253.
- Gibson, J. F. See Bradley, D. C., 191.
- Gidney, P. M., Gillard, R. D., and Heaton, B. T. Solvent effects on the electronic spectra of some 2,2'-bipyridyl palladium(II) and platinum(II) complexes, 132.
- Gidney, P. M., Gillard, R. D., Heaton, B. T., Sheridan, P. S., and Vaughan, D. H. Preparation and properties of the geometric isomers of the dichloro-(3,6-diazaoctane-1,8-diamine)rhodium(III) cation, $[\text{Rh}(\text{trien})\text{Cl}_2]^+$, 1462.
- Giggenbach, Werner F. The blue supersulphide ion, S_2^- , 729.
- Gilbert, M. M. See Einstein, F. W. B., 248.
- Gill, D. F., Mann, B. E., and Shaw, B. L. Transition metal-carbon bonds. Part XXXIII. Internal metallations of secondary and tertiary carbon atoms by platinum(II) and palladium(II), 270.
- Preparative, carbon-13 and phosphorus-31 nuclear magnetic resonance studies on dicarbonyl complexes of ruthenium(II) and ruthenium(I) containing tertiary mono-*t*-butyl- or di-*t*-butyl-phosphines, 311.
- Gill, J. B. See Maylor, R., 534.
- Gillard, R. D., and Pilbrow, M. F. Mechanism of the redox isomerisation of *af*-dichloro-*bc*-bis(pyridine)-*de*-trimethyleneplatinum(IV) to the platinum(II) complex of pyridinium propylide $[\text{PtCl}_2(\text{C}_6\text{H}_5\text{NCH}_2\text{Et})(\text{py})]$, 102.
- Gillard, R. D., and Wiggins, R. A. Optically active coordination compounds. Part XXXI. Stereoselective autoxidations of dimeric vanadium(IV) tartrate complexes, 125.
- Gillard, R. D., Lyons, J. R., and Mitchell, P. R. Reactions of complex compounds of cobalt. Part VIII. Synthesis, protonation, and oxidative degradation of salicylato-cobalt(III) complexes, 233.
- Gillard, R. D. See also Addison, A. W., 1187, 2002, 2009, Dollimore, L. S., 933, and Gidney, P. M., 132, 1462.
- Gillespie, R. J. See Brownstein, Morley, 67.
- Gillespie, Ronald J., and Hulme, Roger. The hydrogen fluoride solvent system. Part VI. Solutions of hydrogen cyanide, silver(I) cyanide, and hexacyanoferric(II) acid: formation of the difluoromethylammonium cation, 1261.
- Gilson, T. R., Bizri, O. F., and Cheetham, N. Single-crystal Raman and infrared spectra of vanadium(V) oxide, 291.
- Ginn, Ian S., Mishra, Shuddhodan P., and Symons, Martyn C. R. Unstable intermediates. Part CXXXVI. A survey of the magnetic properties of $\cdot\text{PL}_3$ and $\cdot\text{PL}_4$ radicals: the radicals $\cdot\text{P}(\text{OH})_3^+$, $\cdot\text{As}(\text{OH})_4$, and $(\text{MeO})_3\text{P}\cdot\text{O}^-$, 2509.
- Ginn, I. S., and Symons, M. C. R. Unstable intermediates. Part CXIX. Electron spin resonance studies of radiation effects upon cyanate and thiocyanate ions in alkali-metal halide crystals and in aqueous glasses, 3.
- Giuliani, Anna M. See Gattegno, Daniela, 1399, 1646.
- Glass, William K. See Brown, David A., 1311.
- Glasser, Lesley S. Dent. See Gunawardane, Richard P., 2397, and Sharma, Santosh K., 1324.
- Glentworth, Peter, Nichols, Alan L., Large, Norman R., and Bullock, Richard J. Europium-151 Mössbauer spectroscopic studies of europic oxide, 969.
- Europium-151 Mössbauer spectroscopic studies of after-effects of the electron-capture decay of gadolinium-151 and the β -decay of samarium-151, 2364.
- Glentworth, Peter, Nichols, Alan L., Newton, David A., Large, Norman R., and Bullock, Richard J. Study of the Mössbauer effect in europium(III) complexes, 546.
- Glockling, F., Morrison, R. J., and Wilson, J. W. Diphenylberyllium: electron impact and calorimetric studies, 94.
- Glockling, Frank, and Houston, Ronald E. Reactions of organodigermanes, 1357.
- Glockling, Frank, and Irwin, James G. Electron impact studies on triphenyl derivatives of the Group IIIb metals, 1424.
- Glockling, Frank, Stobart, Stephen R., and Sweeney, John J. Trimethylsilylmethyl derivatives of mercury, 2029.
- Glyde, R. W. See Wright, Gillian, 220.
- Goddard, Daniel R. See Ajayi, Sunday O., 1751.
- Goel, Ram G. See Beaumont, Ronald E., 1394.
- Goggin, Peter L., and Goodfellow, Robin J. Dicarbonyl-tetrahalogenoplatinate(I) salts, 2355.
- Goggin, Peter L., and Knight, John R. Vibrational spectra of some octahedral trimethylphosphine complexes of rhodium and iridium, 1489.
- Goggin, Peter L., Goodfellow, Robin J., Knight, John R., Norton, Michael G., and Taylor, Brian F. Nuclear magnetic resonance spectra of complexes of platinum(II), palladium(II), platinum(IV), rhodium(III), and iridium(III) containing three or four trimethylphosphine ligands, 2220.
- Goodall, D. C. See Maylor, R., 534.
- Goodfellow, Robin J., Hardy, Martin J., and Taylor, Brian F. ^1H Nuclear magnetic resonance spectra of *cis*-dimethylbis(trimethylphosphine)platinum and some related systems, 2450.
- Goodfellow, Robin J. See also Goggin, Peter L., 2220, 2355.
- Goodgame, David M. L. See Petillon, Françoise, 1209.
- Granito, Juan, and Müller, Herbert. Reactions of pentacarbonyliron(0) and hexacarbonylmolybdenum(0) complexes with thiocyanogen, 1891.
- Graziani, R., Bombieri, G., Forsellini, E., Degetto, S., and Marangoni, G. Preparation, properties, and crystal structure of bis(ethyl carbamate)dinitratodioxouranium(VI), 451.
- Greatrex, Robert. See de Beer, Jacob A., 2341, and Gibb, Terence C., 1253.
- Green, Brian, Ridley, David C., and Sherwood, Peter M. A. X-Ray photoelectron spectroscopy of some dimethylamino-substituted cyclotriphosphazenes, 1042.
- Green, M. See Browning, J., 381.
- Green, Mark. See Ellis, J. David, 1724.
- Green, Michael, and Parker, Graham J. Reactions of coordinated ligands. Part III. Mechanism of the rearrangement of platinum chlorofluoro-olefin complexes, 2099.

- Green, Michael, Heathcock, Susan, and Wood, Dennis C. Reactions of co-ordinated ligands. Part II. The reaction of tricarbonylcycloheptatrieneiron and tricarbonyl-(methyl-, bromo-, and phenyl-cyclo-octatetraene)iron with hexafluoroacetone, dicyanobis(trifluoromethyl)ethylene, and tetracyanoethylene, 1564.
- Green, Michael. See also Clemens, John, 375, 1620, Maples, Peter K., 388, 2069, and Moss, John R., 975.
- Green, Malcolm L. H., and Silverthorn, William E. Arene molybdenum chemistry: some π -allyl, dihydride, di-nitrogen, and carbonyl derivatives, 301.
- Green, Malcolm L. H., Mitchard, Leonard C., and Silverthorn, William E. Arene molybdenum chemistry: arene(π -allyl)molybdenum derivatives containing carboxylate, aminocarboxylate, and related ligands, 1403. Arene molybdenum chemistry: some bis- π -allylic derivatives, 1952. Arene-molybdenum chemistry: nucleophilic addition to the cations $[C_6H_5Mo(\pi-C_3H_5)L_2]^+$ giving cyclohexadienyl derivatives, 2177.
- Greenough, P. See Flint, C. D., 368.
- Greenwood, Norman N. See Gibb, Terence C., 1253.
- Gregson, Anthony K., and Mitra, Samaresh. The crystal-line and molecular susceptibilities of triclinic crystals with application to vanadyl bisacetylacetonate, 1098.
- Griffith, William P., and Pawson, David. Sulphamato-complexes of the platinum metals, 524. Metal nitrido- and oxo-complexes. Part I. Complexes of ruthenium and osmium, 1315.
- Grotewold, Juan. See Fernández, Hector, 2090.
- Guerchais, Jacques E. See Petillon, Françoise, 1209.
- Gullotti, Michele. See Busetto, Carlo, 754.
- Gunawardane, Richard P., Cradwick, M. Elizabeth, and Glasser, Lesley S. Dent. Crystal structure of $Na_2BaSi_2O_8$, 2397.
- Gupta, Yugal K. See Sharma, Prem Dutt, 789.
- Guss, J. Mitchell, and Mason, Ronald. Reactions of [14]-annulene and dehydro[14]annulene with organotricarbonylchromium complexes: crystal and molecular structures of hexacarbonyl-*trans*-6a,12a-dihydro-octalene-dichromium(0), tricarbonyl-1,4-dihydrophenanthrene-chromium(0), and tricarbonylphenanthrenechromium(0), 1834.
- ### H
- Habeeb, J. J., and Tuck, D. G. Co-ordination compounds of indium. Part XVIII. Anionic thiocyanato-complexes of indium(III). Part XXI. Some compounds derived from indium(III) acetate, including indium diacetate, 96, 243.
- Habeeb, J. J. See also Ford-Smith, M. H., 461.
- Hadzisteliou, Isidore, Lawton, Frank, and Phillips, Courtenay S. G. Gas-chromatographic studies of cadmium-olefin complexes, 2159.
- Hägele, G., Harris, R. K., and Nichols, J. M. Nuclear magnetic resonance spectra of symmetrical phosphorus compounds. Part V. 1H Nuclear magnetic resonance spectrum of P,P' -dimethyl- P,P' -di-*t*-butyldiphosphine P,P' -disulphide, an $[AT;X_a]_2$ spin system, 79.
- Haigh, I. See Burgess, J., 501.
- Haines, L. I. B. See Frazer, M. J., 115.
- Haines, Raymond J. See de Beer, Jacob A., 2341.
- Halfpenny, M. T. See Chow, K. K., 147.
- Halfpenny, Michael T. See Baracco, Livio, 1945.
- Hall, David, Waters, T. Neil, and Wright, Peter E. Conformational influences in copper co-ordination compounds. Part V. Crystal and molecular structure of {1,2-bis-[(2-aminobenzylidene)amino]propanato(2-)}copper(II), 1508.
- Hall, David. See also Brown, Kevin L., 1843.
- Hall, John R. See Adams, David M., 1450.
- Hall, Michael B. See Lloyd, Malcolm K., 1743.
- Hall, Thomas L. See Brown, David, 686.
- Hamer, A. D., Tisley, D. G., and Walton, R. A. X-Ray photoelectron spectra of compounds containing rhodium-halogen bonds and of rhodium(II) acetate and its derivatives: rhodium 3d and halogen $n\pi$ binding energies, 116.
- Hamer, Anthony D. See Matthews, Raymond W., 1035.
- Hanley, I. See Majid, A., 1876.
- Haran, Gerald. See Darragh, John I., 2289.
- Haran, Gerrard. See Onak, Thomas, 2115.
- Harding, Michael J., Mason, Stephen F., and Peart, Barry J. Optical rotatory power of co-ordination compounds. Part XVIII. The circular dichroism of trigonal nickel(II) chelate complexes, 955.
- Hardy, Martin J. See Goodfellow, Robin J., 2450.
- Hargreaves, Martin M. See Adams, David M., 1426.
- Harries, Hugo J. See Ault, John L., 1095.
- Harris, David H., Keppie, Stuart A., and Lappert, Michael F. Binuclear organometallic compounds. Part VII. Trimethylstannyl complexes of tantalum(V), molybdenum(IV), and tungsten(IV), 1653.
- Harris, R. K. See Hägele, G., 79.
- Harris, Ronald O., Sadavoy, Lyle S., Nyburg, Stanley C., and Pickard, F. H. Crystal and molecular structure of bis(dithioformato)bis(triphenylphosphine)ruthenium(II), 2646.
- Harrison, Phillip G., and Stobart, Stephen R. Derivatives of divalent germanium, tin, and lead. Part I. The protolysis of cyclopentadienyltin(II) compounds by hydroxy-derivatives. Tin(II) oximes and hydroxylamines, 940.
- Harrison, W., and Trotter, J. Crystal structure of chloro[dodeca(dimethylamino)cyclohexaphosphazene-NNNN]-cobalt(II) di- μ -chloro-bis[dichlorocobaltate(II)]-bischloroform, 61.
- Hart, F. Alan. See Bradley, Donald C., 1021.
- Hartley, Frank R. See Alcock, Roland M., 1070.
- Hartman, J. Stephen. See Bula, Michael J., 1047.
- Haszeldine, R. N. See Crossman, J. M., 483.
- Hathaway, Brian J. See Dudley, Richard J., 1044.
- Hawkins, Alan. See Kennedy, John F., 1129.
- Hay, R. W., and Morris, P. J. Interaction of DL-2,3-diaminopropionic acid and its methyl ester with metal ions. Part II. Hydrolysis kinetics, 56.
- Hay, Robert W. See Cook, Donald F., 1160, and Nolan, Kevin B., 2503.
- Hayes, John W., Millar, Donald J., Radford, Donald V., and Saxby, John D. The conformation of triphenylbismuthine and tris-(*p*-chlorophenyl)bismuthine in benzene solution, 1101.
- Healy, Peter C., and White, Alan H. Crystal structure of bis(NN-diethyldithiocarbamate)mercury(II), 284.
- Healy, Peter C., Kepert, David L., Taylor, Donald, and White, Allan H. Crystal structure of dicaesium octa- μ_3 -chloro-hexachloro-octahedro-hexa-tungstate(II) and -molybdate(II) complexes, 646.
- Healy, Peter C. See also Brotherton, Peter Donald, 334.
- Heathcock, Susan. See Green, Michael, 1564.
- Heaton, B. T. See Gidney, P. M., 132, 1462.

- Hedwig, Gavin R., and Powell, H. Kipton J. Thermodynamics of complex formation of 1,5,8,12-tetraazadodecane with copper(II) ions and protons in aqueous solution, 793.
- A reinvestigation of the enthalpy changes for the interaction of the sulphate ion with some transition-metal ions in aqueous solution, 798.
- Complex formation with a C-alkyl-substituted linear tetraamine. Free energy, enthalpy, and entropy changes for the reactions of 4,4,9,9-tetramethyl-5,8-diazadodecane-2,11-diamine with copper(II) ions and protons in aqueous solution, 1942.
- Henry, R. Peter, Mitchell, Philip C. H., and Prue, John E. Hydrolysis of the oxovanadium(IV) ion and the stability of its complexes with the 1,2-dihydroxybenzenato(2-) ion, 1156.
- Herbstein, Frank H., and Weissman, Aharon. Thermal decomposition of potassium permanganate and related substances. Part III. Direct evidence that $K_3(MnO_4)_2$ is not an intermediate phase in the thermal decomposition of potassium permanganate in air at ca. 200 °C, 1701.
- Hewitt, Bernard J., Holliday, A. K., and Puddephatt, R. J. Vinyltitanium trichloride, 801.
- Higginson, William C. E. See Hutchinson, Michael H., 1247, and Scott, Keith L., 2335.
- Higson, Brian M. See Cummins, Diane, 414, 1359.
- Hill, H. Allen O., Horsler, Andrew D. J., and Sadler, Peter J. 1H Nuclear magnetic resonance investigation of the formation of molecular salicylideneiminato-cobalt(II), -nickel(II), -copper(II), and -zinc(II) complexes with 1,3,5-trinitrobenzene, 1805.
- Hill, H. Allen O., Sadler, Peter J., and Williams, Robert J. P. The effect of 1,3,5-trinitrobenzene on 1H nuclear magnetic resonance and electron paramagnetic resonance spectra of some cobalt(II) porphyrins, 1663.
- Hill, Nicholas J. See Mowat, Walter, 770.
- Hill, Norman. See Finch, Arthur, 2543.
- Hill, W. E., Dalton, J., and McAuliffe, C. A. Co-ordination complexes containing multidentate ligands. Part II. Five-co-ordinate nickel(II) and cobalt(II) complexes containing tridentate ligands with Group Vb donors, 143.
- Hillier, Ian H. See Lloyd, Malcolm K., 1743.
- Hilton, J., Nunn, E. K., and Wallwork, S. C. Crystal structure of anhydrous nitrates and their complexes. Part VI. Dimethyldinitratotri(IV), 173.
- Hobday, Malcolm D. See Toy, Alfred D., 1259.
- Hodgson, Peter G. See Dudley, Richard J., 1044.
- Holliday, A. K. See Hewitt, Bernard J., 801.
- Holloway, Clive E. See Kandil, Kandil S. A., 1421.
- Holsboer, Florian, Beck, Wolfgang, and Bartunik, Hans D. X-Ray photoelectron and Mössbauer spectroscopy of triphenylphosphine-iridium complexes, 1828.
- Holt, Elizabeth M., and Holt, Smith L. Crystal and molecular structure of dicarbonyl- π -cyclopentadienyl[tetrakis-(pyrazol-1-yl)borato]molybdenum, 1893.
- Holt, Elizabeth M., Holt, Smith L., and Watson, Kenneth J. Crystal and molecular structure of dicarbonyl(hydrotris-(pyrazol-1-borato-N(2),N(2'),N(2''))- π -(2-methylallyl)-molybdenum, 2444.
- Holt, Smith L. See Holt, Elizabeth M., 1893, 2444.
- Hoof, D. L., Tisley, D. G., and Walton, R. A. Studies on metal carboxylates. Part III. Pyridine-2,6-dicarboxylates of the lanthanides. Synthesis and spectral studies and the X-ray photoelectron spectra of several pyridine carboxylate complexes, 200.
- Hoof, David L. See Matthews, Raymond W., 1035.
- Hooper, Alan J. See Allen, Geoffrey C., 1675, and Barker, Marten G., 1513, 1517, 1520, 2614, 2618.
- Hooper, Martin A. See Adams, David M., 2264.
- Hopgood, David. See Cook, Philip M., 294.
- Horsler, Andrew D. J. See Hill, H. Allen O., 1805.
- Hoskins, Bernard F., and Whillans, Francis D. Crystal and molecular structure of a μ -hyponitrito-bis[penta-ammine-cobalt(III)] salt: the nature of the red nitrosylpenta-amminecobalt(III) cation, 607.
- House, Donald A. See Sadler, William A., 1937.
- Houston, Ronald E. See Glockling, Frank, 1357.
- Howard, James. See Onak, Thomas, 76, 2633.
- Howard, Judith, and Woodward, Peter. Crystal and molecular structure of *cis*-fluoro-(1,1,1,3,3,3-hexafluoroisopropyl)bis(triphenylphosphine)platinum, $PtF[CH(CF_3)_2](PPh_3)_2$: a square planar metal fluoro-complex, 1840.
- Howard, Judith. See also Marsh, Robert A., 778.
- Howe, D. V. See Cockburn, B. N., 404.
- Howie, R. Alan, Moser, Wolf, Starks, Richard G., Woodhams, Frank W. D., and Parker, William. Potassium tin(II) sulphate and related tin apatites: Mössbauer and X-ray studies, 1478.
- Howie, R. Alan. See also Donaldson, John D., 1810.
- Hsieh, Andrew, T. T., and Wilkinson, Geoffrey. Carbonyl complexes of iron, cobalt, and nickel with tris(trimethylsilylmethyl)phosphine, 867.
- Hughes, David L. Crystal structure of thallium(I) L-ascorbate, 2209.
- Alkali-metal complexes. Part VII. Crystal and molecular structures of the *o*-nitrophenolatobis(1,10-phenanthroline) complexes of sodium and rubidium, 2347.
- Hui, Benjamin C. See James, Brian R., 2247.
- Hull, J. R. See Middleton, R., 120.
- Hulme, Roger. See Gillespie, Ronald J., 1261.
- Humphreys, Derek, and Staples, Peter J. Behaviour of diamine-*af*-dibromo-dinitroplatinum(IV) complexes and the adduct *ac*-dinitro-*bd*-bis(pyridine)platinum(II)-boron trifluoride in acidic solutions, 897.
- Hunter, P. W. W., and Webb, G. A. Complexes of nickel(II) and copper(II) with some 2,3,4,5-tetrahydro-1H-1,5-benzodiazepines, 26.
- Husband, J. P. N. See Cragg, R. H., 568.
- Hussian, Khawaja S. See Finch, Arthur, 2543.
- Hutchinson, Michael H., and Higginson, William C. E. Stability constants for association between bivalent cations and some univalent anions, 1247.
- Hyde, Michael R., Taylor, Roger S., and Sykes, A. Geoffrey. Assignment of inner- and outer-sphere mechanisms to the vanadium(II) reductions of halogenopenta-ammine-cobalt(III) complexes, 2730.
- Hynes, Michael J., and Moran, Andrew J. Rates and mechanisms of substitution reactions of platinum dithiolato-complexes, 2280.

- Ingletto, Giulio. See Day, Peter, 2595.
- Irving, Roger J., and Schulz, Ronald A. Enthalpies of solvation of some metal acetylacetonates, 2414.
- Irving, Roger J., Post, Michael L., and Povey, David C. Crystal structure of di- μ -tropolonato-bis[aquo(tropolonato)nickel(II)], 697.
- Irwin, James G. See Glockling, Frank, 1424.

J

- Jacobson, Robert A. See Johnson, John E., 580.
 Jagur-Grodzinski, J. See Ozari, Y., 474.
 Jain, Prem C., and Syal, V. K. Crystal and molecular structure of bis-(N-n-hexyl-7-methylsalicylaldiminato)-copper(II), 1908.
 James, B. D. See Davies, N., 162.
 James, Brian R., Markham, Larry D., Hui, Benjamin C., and Rempel, Garry L. Synthesis and catalytic properties of some carbonyltriphenylphosphineruthenium(II) complexes, 2247.
 James, Tom A. See Ahmad, Naseer, 1148, 1151.
 Jefferson, Robin, Nixon, John F., Painter, Terence M., Keat, Rodney, and Stobbs, Leslie. Formation of cyclophosph-(III)azanes and their oxo- and thioxo-derivatives, 1414.
 Jeffery, Edward A. See Chatt, Joseph, 1167.
 Jeffreys, J. A. D., Willis, C. M., Robertson, I. C., Ferguson, G., and Sime, J. G. Crystal and molecular structure of tricarbonyl- π -[1,1,1-tricarbonyl-2-methyl-3-diphenyl-methylene-6-methoxyferra-2-oxacyclohexenyl]iron-(Fe-Fe), a product from the reaction between diphenyldiazomethane and tricarbonyl- π -[1,1,1-tricarbonyl-2,5-dimethoxyferracyclopentadiene]iron, 749.
 Jeffreys, J. A. D. See also Brown, D. H., 732.
 Jenkins, Roger A. See Cook, Philip M., 294.
 Jenkinson, Michael A. See Finch, Arthur, 2237, 2725.
 Jewess, M. See Dickens, P. G., 30.
 Johnson, Brian F. G., and Segal, J. A. Transition-metal nitrosyl compounds. Part VIII. The preparation and properties of some cationic nitrosyl complexes of zero-valent ruthenium and osmium, 478.
 Johnson, Brian F. G. See also Brodie, Andrew M., 1997, Canty, Alan J., 2056, Cockburn, B. N., 404, and Deeming, Antony J., 1848.
 Johnson, D. A., and Martin, J. F. Thermodynamic properties of tetra-alkylammonium ions in aqueous solution, 1585.
 Johnson, John E., and Jacobson, Robert A. Crystal and molecular structure of di[iodobis-(2,2'-bipyridylamine)-copper(II)] iodide perchlorate, 580.
 Johnson, Michael D. See Dodd, David, 1218.
 Jonassen, Hans B. See Wheelock, Kenneth S., 1457.
 Jones, Derry W. See Ferraris, Giovanni, 816.
 Jones, E. Malcolm. See Connor, Joseph A., 347, 2119, and Lloyd, Malcolm K., 1743, 1768.

K

- Kandil, Kandil S. A., and Holloway, Clive E. Dissymmetric tertiary-alkyl tin(IV) compounds, 1421.
 Kane-Maguire, Leon A. P. See Al-Kathumi, Khaliel M., 1683.
 Kaspi, Panos. See Gibb, Terence C., 1253.
 Kay, Alan, and Mitchell, Philip C. H. Reactions of the di- μ -oxo-bis[(L-cysteinato)oxomolybdate(V)] ion, 1388.
 Keable, Howard R. See Briggs, David, 2143.
 Keat, Rodney. See Jefferson, Robin, 1414.
 Keating, T. See Cockburn, B. N., 404.
 Kelly, J. Duncan. See Wheelock, Kenneth S., 1457.
 Kemmitt, Raymond D. W., Kimura, Bert Y., and Littlecott, George W. Electrophilic addition to hexafluorobut-2-yne complexes of platinum(0), rhodium(I), and iridium(I), 636.
 Kemmitt, Raymond D. W. See also Bland, William J., 1292.
 Kemp, Terence J. See Ali, Latif H., 1468, 1475, and Allen, David M., 1899.
 Kennard, C. H. L. See Shields, K. G., 741.
 Kennedy, John D., and McFarlane, William. Nuclear magnetic double resonance studies of organotin selenides, 2134.
 Kennedy, John F., Barker, S. Alan, Nicol, Alastair W., and Hawkins, Alan. Poly-(4- and 5-acrylamidosalicylic acids). Part IV. Selectivity in the extraction of metal cations from aqueous solution, 1129.
 Kepert, David L., Taylor, Donald, and White, Allan H. Crystal structure of the dimeric pyridine 1-oxide complex with mercury(I) perchlorate, 392.
 Crystal structure of hexakis(pyridine 1-oxide)mercury(II) bisperchlorate, 670.
 Crystal structure of bis[(3-chloropyridine)mercury(I)] diperchlorate, 893.
 Crystal structure of hexakis(triphenylphosphine oxide)-dimercury(I) bisperchlorate, 1658.
 Kepert, David L. See also Clare, Brian W., 2476, 2479, 2481, Dewan, John C., 224, 2082, Field, Ross Anthony, 1858, and Healy, Peter C., 646.
 Keppie, Stuart A. See Harris, David H., 1653.
 Kerr, D. F., and Wilson, I. R. Reaction of sulphur dicyanide with thiocyanate ion, 459.
 Ketteringham, Antony P., and Oldham, Colin. Raman spectra of multiply bonded metal species, 1067.
 Ketteringham, Antony P. See also Oldham, Colin, 2304.
 Kilner, Melvyn. See Briggs, David, 2143.
 Kimber, Richard E. See Deeming, Antony J., 2589.
 Kimura, Bert Y. See Kemmitt, Raymond D. W., 636.
 King, Adrian W., Swann, David A., and Waters, T. Neil. Colour, isomerism, and structure of some copper coordination compounds. Part XXI. Crystal and molecular structure of the 2:1 adduct between 1,3,5-trinitrobenzene and bis-(N-methylsalicylaldiminato)copper(II), 1819.
 King, T. J. See Millington, Douglas, 396.
 Knight, John R. See Goggin, Peter L., 1489, 2220.
 Knox, Selby A. R. See George, Raymond D., 972.
 Kobayashi, Sho-Ichiro. See Murakami, Yukito, 1734.
 Kochi, Jay K. See Tamaki, Akihiro, 2620.
 Kolodny, R. A., Morris, T. L., and Taylor, R. C. Zwitterionic complexes of cobalt(II), 328.
 Konstantinović, Jovan M. See Petković, Djordje M., 1649.
 Kruczynski, L. J. See Delbaere, L. T. J., 307.
 Kubota, Mitsuru, Rothrock, Richard K., and Geibel, J. Alkyl and aryl migration from carbon monoxide to platinum promoted by silver ion, 1267.
 Kustin, Kenneth, and Liu, Sung-Tsuen. Stability constants and relaxation spectra of L-proline and L-hydroxyproline metal complexes, 278.
 Kustin, Kenneth, and Wolff, Michael A. Complexes of the nickel(II) ion with purine bases: relaxation spectra with theophylline, 1031.

L

- Laing, Kerry R., Robinson, Stephen D., and Uttley, Michael F. Complexes of the platinum metals. Part III. Arylazo and aryl-diimine derivatives, 2713.
 Lalor, Fergus J. See Carroll, William E., 718, 1754, and Williams, William E., 1329.
 Lancaster, John C. See Barnard, Paul F. B., 2172.

- Lappert, Michael F., and Palmer, Dorothy E.** Alkylidene-amido-derivatives of metals and metalloids. Part IV. 1,1-Bis(trifluoromethyl)methyleneamido-complexes of Group IVB metals, 157.
- Lappert, Michael F., McMeeking, John, and Palmer, Dorothy E.** Alkylideneamido-derivatives of metals and metalloids. Part III. The chemistry of alkylidene-amino(trimethyl)stannanes, 151.
- Lappert, Michael F.** See also **Cardin, David J.**, 514, 1982, **Cetinkaya, Bekir**, 906, 1202, 1975, **Collier, M. R.**, 445, and **Harris, David H.**, 1653.
- Large, Norman R.** See **Glentworth, Peter**, 546, 969, 2364.
- Larkworthy, Leslie F.** See **Barnard, Robert**, 604, and **Fitzsimmons, Brian W.**, 676.
- Lau, Clement, and Passmore, Jack.** Preparation and identification of various chlorodifluoro-oxosulphur(vi) salts. Evidence for chlorotrifluorosulphur(vi) oxide, 2528.
- Lau, Clement, Lynton, Harry, Passmore, Jack, and Siew, Pik-Yuen.** Crystal structure of trifluoro-oxosulphur(vi) hexafluoroarsenate(v), $\text{OSF}_6^+ \text{AsF}_6^-$, 2535.
- Lau, Clement.** See also **Dunphy, Richard F.**, 2533.
- Laughlin, David.** See **Donaldson, John D.**, 1985.
- Laurence, Gerald S., and Thornton, Andrew T.** Kinetics of oxidation of transition-metal ions by halogen radical anions. Part III. The oxidation of manganese(II) by dibromide and dichloride ions generated by flash photolysis, 1637.
- Laurence, Gerald S.** See also **Thornton, Andrew T.**, 804, 1632.
- Lawton, Frank.** See **Hadzisteliou, Isidore**, 2159.
- Le Fèvre, Raymond J. W.** See **Armstrong, Robert S.**, 1132.
- Legzdins, Peter.** See **Crease, Allan E.**, 1501.
- Leigh, G. Jeffery.** See **Bell, Bernard**, 997, and **Chatt, Joseph**, 612, 2021.
- Leitch, Diana M.** See **Ebsworth, E. A. V.**, 1287.
- Leporati, Enrico.** See **Braibanti, Antonio**, 323, 2539.
- Lethbridge, James W.** See **Nor, Othman**, 1758.
- Levason, W., and McAuliffe, C. A.** The co-ordination chemistry of manganese. Part II. Some pentachloro-manganates(III), 455.
- Lewis, J.** See **Cockburn, B. N.**, 404.
- Lewis, Jack.** See **Brodie, Andrew M.**, 1997, **Canty, Alan J.**, 2056, and **Deeming, Antony J.**, 1848.
- Libbey, E. T.** See **Bancroft, G. M.**, 2103.
- Lincoln, Stephen F.** Nitrogen-14 magnetic resonance study of pyridine exchange in bis(pentane-2,4-dionato)-dipyridine-cobalt(II) and -nickel(II) complexes, 1896.
- Lincoln, Stephen F.** See also **Crea, Joseph**, 2075.
- Lintonbon, Roger M.** See **Baker, Marten G.**, 2618.
- Littlecott, George W.** See **Kemmitt, Raymond D. W.**, 636.
- Liu, Sung-Tsuen.** See **Kustin, Kenneth**, 278.
- Lloyd, D. J.** See **Gatehouse, B. M.**, 70.
- Lloyd, D. R.** See **DeKock, R. L.**, 526.
- Lloyd, Malcolm K., McCleverty, Jon A., Connor, Joseph A., and Jones, E. Malcolm.** Voltammetric oxidation of arene, cycloheptatriene, and cycloheptatrienyl tricarbonyl complexes of chromium, 1768.
- Lloyd, Malcolm K., McCleverty, Jon A., Orchard, David G., Connor, Joseph A., Hall, Michael B., Hillier, Ian H., Jones, E. Malcolm, and McEwen, Gerald K.** Electrochemical oxidation of organometallic complexes. Carbene and Lewis base complexes of chromium, molybdenum, and tungsten carbonyls, 1743.
- Lloyd, Malcolm K.** See also **Dart, James W.**, 1747, 2039, 2046, and **Frisch, P. Douglas**, 2268.
- Locanto, Giovanni.** See **Cavasino, Francesco P.**, 2419.
- Lockhart, J. C., and Mossop, W. J.** Redistribution reactions of some transition-metal chelates. Part I. Thermodynamics of bidentate ligand exchange between nickel(II) chelates. Part II. Kinetics of bidentate ligand exchange between chelate complexes of nickel(II), 19, 662.
- Lockhart, J. C.** See also **Blackborow, J. Richard**, 1303.
- Lockman, Bill.** See **Onak, Thomas**, 2115.
- Long, Gary J., Robinson, William T., Tappmeyer, Wilbur P., and Bridges, Douglas L.** The magnetic, electronic, and Mössbauer spectral properties of several trinuclear iron(III) carboxylate complexes, 573.
- Lynden-Bell, Ruth M., Mather, Gary G., and Pidcock, Alan.** Proton and phosphorus-31 nuclear magnetic resonance spectra of octahedral trisdimethylphenylphosphine complexes with meridional configurations, 715.
- Lynton, Harry.** See **Dunphy, Richard F.**, 2533, and **Lau, Clement**, 2535.
- Lyons, J. R.** See **Gillard, R. D.**, 233.

M

- Mabbs, Frank E., McLachlan, Victor N., McFadden, Dennis, and McPhail, Andrew T.** Magnetic properties and crystal and molecular structure of μ -oxo-bis[bis-(2-methyl-8-hydroxyquinolato)iron(III)]-chloroform, 2016.
- Mauley, Alexander, and Shanker, R.** Metal-ion oxidations in solution. Part X. A reinvestigation of the reactions of thiourea and its *N*-substituted derivatives with cobalt(III) ions in aqueous perchlorate media, 2321.
- Mauley, Alexander.** See also **Ellis, Keith J.**, 1533.
- McAuliffe, C. A.** See **Chow, K. K.**, 147, **Hill, W. E.**, 143, and **Levason, W.**, 455.
- McAuliffe, Charles A.** See **Baracco, Livio**, 1945.
- McBride, D. W.** See **Delbaere, L. T. J.**, 307.
- McCaffery, A. J., Rowe, M. D., and Rice, D. A.** Magnetic circular dichroism and absorption spectra of some d^8 hexalides, 1605.
- McCaffery, Anthony J.** See **Gale, Rodney**, 1344.
- McCleverty, Jon A., and da Mota, M. Mannela M.** Isocyanide and carbene complexes of gold(I). The stepwise formation of formamides, 2571.
- McCleverty, Jon A.** See also **Dart, James W.**, 1747, 2039, 2046, **Frisch, P. Douglas**, 2268, and **Lloyd, Malcolm K.**, 1743, 1768.
- McCormick, I. Ross N.** See **Curtis, Neil F.**, 1537.
- McEwen, G. K.** See **Connor, J. A.**, 347.
- McEwen, Gerald K.** See **Lloyd, Malcolm K.**, 1743.
- McFadden, Dennis.** See **Mabbs, Frank E.**, 2016.
- McFarlane, H. Christina E., and McFarlane, William.** Studies of tellurium shielding by heteronuclear magnetic double resonance in a representative series of compounds, 2416.
- McFarlane, William, and Rycroft, David S.** Studies of organophosphorus selenides by heteronuclear magnetic triple resonance, 2162.
- McFarlane, William.** See also **Kennedy, John D.**, 2134, and **McFarlane, H. Christina E.**, 2416.
- Mackay, K. M., and Stobart, S. R.** Transition-metal carbonyl derivatives of the germanes. Part IV. Germylpentacarbonylrhenium, 214.

- McKenzie, E. Donald. See Bailey, Neil A., 1227, and Cummins, Diane, 414, 1359.
- McKnight, Maxey D. See Carlisle, Gene O., 1703.
- McLachlan, Victor N. See Mabbs, Frank E., 2016.
- McLaughlin, George M. See Mather, Gary G., 1823.
- McMeeking, John. See Çetinkaya, Bekir, 1202, 1975, and Lappert, Michael F., 151.
- McPhail, Andrew T. See Coggon, Philip, 1888, and Mabbs, Frank E., 2016.
- McQuillan, Geoffrey P. See Aitken, Gordon B., 2637.
- McWhinnie, William R. See Barnard, Paul F. B., 2172.
- Maddock, Alfred G., and Medeiros, Luis O. Solvent extraction from halide solutions. Part VI. Complexing constants for ferric thiocyanates and the temperature dependence of their extraction, 1088.
- Maddock, Alfred G. See also Siekierska, Krystyna E., 1086.
- Magon, Luciano. See Bor, György, 1308.
- Mague, Joel T., Nutt, Michael O., and Gause, Edward H. Fluorocarbon complexes of transition metals. Part II. Tertiary arsine complexes of rhodium(III) derived from hexafluorobut-2-yne and 3,3,3-trifluoropropyne, 2578.
- Maitlis, Peter M. See White, Colin, 1901.
- Majid, A., Sharp, D. W. A., Winfield, J. M., and Hanley, I. Diethylamido- and pentafluorophenoxo-tungsten(VI) fluorides, 1876.
- Makhija, Ramesh C., Beauchamp, André L., and Rivest, Roland. Crystal and molecular structure of dithiocyanatobis(triphenylphosphine)mercury(II), 2447.
- Mallinson, Paul R. See Bullen, Graham J., 1295.
- Manassero, Mario. See Bellon, Pierluigi, 2423.
- Mangia, Alessandro, Nardelli, Mario, Pelizzi, Corrado, and Pelizzi, Giancarlo. Spectroscopic and magnetic properties and crystal structure of di- μ -methoxy-bis[salicylaldehyde anthraniloylhydrazonato(2-)]dimanganese(III)-bis-methanol, 1141.
- Mangia, Alessandro, Pelizzi, Corrado, and Pelizzi, Giancarlo. Seven-co-ordination in μ -oxalato-bis[(di-*n*-propyl sulphoxide)nitratediphenyltin(IV)]: spectroscopic properties and X-ray crystal structure, 2557.
- Mangia, Alessandro. See also Biscarini, P., 159.
- Mann, B. E. See Gill, D. F., 270, 311.
- Mann, Brian E. Carbon-13 nuclear magnetic resonance spectra of some carbonyl complexes of chromium, molybdenum, and tungsten, 2012.
- Mann, Brian E., Pietropaolo, Rosario, and Shaw, Bernard L. Transition metal-carbon bonds. Part XXXIV. ^1H and ^{13}C nuclear magnetic resonance studies on π -allyl-palladium complexes, 2390.
- Manning, A. R. See Newman, Josephine, 1593, and Thornhill, D. J., 2086.
- Maples, Peter K., Green, Michael, and Stone, F. Gordon A. Reactions of low-valent metal complexes with fluorocarbons. Part XXVI. 1,1,1-Tris(diphenylphosphino-methyl)- and 1,1,1-tris(diphenylarsinomethyl)-ethane, 388.
- Lewis acid-promoted vinyl rearrangement and halogen exchange of platinum-fluoro-olefin complexes, 2069.
- Marangoni, G. See Bandoli, G., 886, and Graziani, R., 451.
- Marangoni, Gianpaolo, Panayotou, Maria, and Tobe, Martin L. Proton exchange in the base hydrolysis of deuterated *trans*-dichlorobis(ethylenediamine)cobalt(III) and *trans*-dichloro[(*RS*)-1,9-diamino-3,7-diazanone]cobalt(III) cations, 1989.
- Maresca, Luciana. See Bor, György, 1308.
- Markham, Larry D. See James, Brian R., 2247.
- Marongiu, G. See Cannas, M., 251.
- Marsh, Robert A., Howard, Judith, and Woodward, Peter. Crystal and molecular structure of bis-(π -2-methylallyl)-bis(trimethyl phosphite)ruthenium. An example of asymmetric π -bonding between methylallyl ligands and ruthenium, 778.
- Martell, Arthur E. See Murakami, Yukito, 1729.
- Martin, Dennis W., and Waters, T. Neil. Conformational influences in copper co-ordination compounds. Part VI. Crystal structure of a fourth crystalline isomer of bis-(2-hydroxy-*N*-methyl-1-naphthylmethyleiminato)copper(II), 2440.
- Martin, J. F. See Johnson, D. A., 1585.
- Martinengo, S. See Albano, V. G., 651.
- Martini, Giacomo. See Bertini, Ivano, 1644.
- Maslen, Edward N. See Dewan, John C., 2082.
- Mason, Peter R. See Dobbie, Robert C., 1124.
- Mason, Ronald. See Dart, James W., 1747, 2039, 2046, and Guss, J. Mitchell, 1834.
- Mason, S. F., and Peacock, R. D. Complexes of some first-row transition elements with (-)-spartein, 226.
- Mason, Stephen F., and Peart, Barry J. Optical rotatory power of co-ordination compounds. Part XVII. The circular dichroism of trisbipyridyl and trisphenanthroline complexes, 949.
- Mason, Stephen F., Peart, Barry J., and Waddell, Robin E. Optical rotatory power of co-ordination compounds. Part XVI. Intermediate exciton coupling in the circular dichroism of trisbipyridyl complexes, 944.
- Mason, Stephen F. See also Harding, Michael J., 955.
- Masson, Charles R. See Sharma, Santosh K., 1324.
- Mather, Gary G., and Pidcock, Alan. Phosphite and phosphonate complexes. Part IV. *trans*-Influence in mercury(II) complexes. X-Ray crystal structure analysis of bis(dimethyl phosphonato)mercury(II), 560.
- Mather, Gary G., McLaughlin, George M., and Pidcock, Alan. X-Ray crystal structure analysis, nuclear magnetic resonance and Mössbauer parameters of *trans*-tetrachlorobis(triethylphosphine)tin(IV), 1823.
- Mather, Gary G., Pidcock, Alan, and Rapsey, Graham J. N. Correlation of nuclear magnetic resonance coupling constants with transition metal-ligand bond lengths in tertiary phosphine complexes, 2095.
- Mather, Gary G. See also Lynden-Bell, Ruth M., 715.
- Matsuda, Yoshihisa. See Murakami, Yukito, 1729, 1734.
- Matthews, A. P. See Flint, C. D., 368.
- Matthews, K. Murray, and Odell, Allan L. Tritium exchange reactions on irradiated silica gel. Part I. Activation of molecular tritium and application to the tritium labelling of aliphatic hydrocarbons, 1145.
- Matthews, Raymond W., Hamer, Anthony D., Hoof, David L., Tisley, David G., and Walton, Richard A. Studies on metal carboxylates. Part IV. Pyridine-2,6-dicarboxylate complexes of cobalt(II), nickel(II), rhodium(II), and rhodium(III). Synthesis, spectral and magnetic properties, and a study of rhodium 3d binding energies by X-ray photoelectron spectroscopy, 1035.
- Matts, Terence C., Moore, Peter, Ogilvie, Dorothy M. W., and Winterton, Neil. Kinetics of the acid hydrolysis of nitrito-complexes. Part III. Nitrito-chromium(III) complexes, 992.
- Mawby, R. J. See Wright, Gillian, 220.
- Mawby, Roger J. See Walker, Peter J. C., 622.

- Maylor, R., Gill, J. B., and Goodall, D. C.** Anhydrous transition-metal sulphites. Part II. Preparation of anhydrous cobalt(II) and nickel(II) sulphates and pyrosulphates by oxidation of anhydrous cobalt(II) and nickel(II) sulphites, using the mixed non-aqueous system dimethyl sulphoxide-sulphur dioxide, 534.
- Mays, Martin J., and Sears, Paul L.** Preparation and Mössbauer spectra of some cyclopentadienyl iron complexes containing a chelating diphosphine ligand, 1873.
- Medeiros, Luis O.** See **Maddock, Alfred G.**, 1088.
- Meek, Devon W.** See **Slinkard, William E.**, 1024.
- Meer, H. van der.** Crystal structure of the copper(II) complex of 2,5-dithiahexane-1,6-dicarboxylic acid, 1.
- Mekhail, Filkry M.** See **Burgess, John**, 1335, and **Gardner, E. Roy**, 1340.
- Melovski, Ljiljana.** See **Gal, Ivan J.**, 2066.
- Mentasi, Edoardo, and Pelizzetti, Ezio.** Reactions between iron(III) and catechol (*o*-dihydroxybenzene). Part I. Equilibria and kinetics of complex formation in aqueous acid solution, 2605.
- Mentasi, Edoardo, Pelizzetti, Ezio, and Saini, Guido.** Reactions between iron(III) and catechol (*o*-dihydroxybenzene). Part II. Equilibria and kinetics of the redox reaction in aqueous acid solution, 2609.
- Mentzer, Eric.** See **Ainscough, Eric W.**, 2167.
- Mercer, Mary, and Truter, Mary R.** Crystal structures of complexes between alkali-metal salts and cyclic polyethers. Part VI. Complex formed between dicyclohexyl-18-crown-6, isomer B, (perhydrodibenzo[*b,h*]-[1,4,7,10,13,16]hexaoxacyclo-octadecin) and sodium bromide. Part VII. Complex formed between dibenzo-24-crown-8(6,7,9,10,12,13,20,21,23,24,26,27-dodecahydrodibenzo[*b,n*]-1,4,7,10,13,16,19,22-octaoxacyclotetradecan) and two molecules of potassium isothiocyanate, 2215, 2469.
- Middleton, R., Hull, J. R., Simpson, S. R., Tomlinson, C. H., and Timms, P. L.** Chemistry of transition-metal vapours. Part III. Formation of complexes with arenes, trifluorophosphine, and nitric oxide, 120.
- Middleton, Trevor B.** See **Emsley, John**, 2701.
- Midollini, Stefano, and Cecconi, Franco.** Nickel(II) and nickel(I) complexes with tripod arsine ligands, 681.
- Milić, Nikola B.** Effect of the ionic medium on the hydrolysis of metal ions: an empirical relation, 229.
- Millar, Donald J.** See **Hayes, John W.**, 1101.
- Millington, Douglas, and Sowerby, D. Bryan.** Reactions of tris- and tetrakis-dimethylaminochlorotetraphosphonitriles with antimony trifluoride, 2649.
- Millington, Douglas, King, T. J., and Sowerby, D. Bryan.** Cyclic inorganic compounds. Part XIV. Crystal and molecular structure of 1, *cis*-3, *trans*-5, *trans*-7-tetrakis-(dimethylamino)-1,3,5,7-tetrafluorotetraphosphonitrile, 396.
- Milne, David W.** See **Braterman, Paul S.**, 1027.
- Milone, Luciano.** See **Randall, Edward W.**, 1672.
- Mishra, S. P., and Symons, Martyn C. R.** Unstable intermediates. Part CXXXI. An electron spin resonance study of a range of radicals in irradiated phenylphosphonic dichloride and phenylphosphonothionic dichloride, 1494.
- Mishra, Shuddhodan P.** See **Ginns, Ian S.**, 2509.
- Mitchard, Leonard C.** See **Green, Malcolm L. H.**, 1403, 1952, 2177.
- Mitchell, Philip C. H.** See **Henry, R. Peter**, 1156, and **Kay, Alan**, 1388.
- Mitchell, P. R.** See **Gillard, R. D.**, 233.
- Mitchell, Robert W., Spencer, Alwyn, and Wilkinson, Geoffrey.** Carboxylato-triphenylphosphine complexes of ruthenium, cationic triphenylphosphine complexes derived from them, and their behaviour as homogeneous hydrogenation catalysts for alkenes, 846.
- Mitra, Samaresh.** See **Gregson, Anthony K.**, 1098.
- Mohri, Michihiro.** See **Funabiki, Takuzo**, 1813.
- Mokuolu, Joseph A. A., Payne, Douglas S., and Speakman, J. Clare.** Crystal and molecular structure of dichloro-[bis(diphenylphosphino)ethylamine]palladium(II), 1443.
- Mooney, Arthur, and Smith, W. Ewen.** 'Weak-field' ligand-field calculation for tetragonally distorted d^2 and d^8 systems, 287.
- Mooney, Arthur, Nuttall, Robert H., and Smith, W. Ewen.** The single-crystal spectrum of transitions to 4G states of nickel(II) in distorted tetrahedral environments, 1920.
- Moore, P.** See **Benton, D. J.**, 399.
- Moore, Peter, and Buck, Dorothy M. W.** Evidence for a rate-determining chelate-ring-closure mechanism during the formation of the (2,2'-bipyridine)nickel(II) ion in dimethyl sulphoxide solution, 1602.
- Moore, Peter.** See also **Matts, Terence C.**, 992.
- Moore, Robert D.** See **Bland, William J.**, 1292.
- Moorhouse, Stephen.** See **Abel, Edward W.**, 1706.
- Moran, Andrew J.** See **Hynes, Michael J.**, 2280.
- Morazzoni, Franca.** See **Busetto, Carlo**, 754, 1712.
- Mori, Giovanni.** See **Braibanti, Antonio**, 323, 2539.
- Morris, P. J.** See **Hay, R. W.**, 56.
- Morris, T. L., and Taylor, R. C.** Palladium(II) complexes containing 'mixed' nitrogen-arsenic polydentate ligands, 175.
- Morris, T. L.** See also **Kolodny, R. A.**, 328.
- Morrison, R. J.** See **Glocking, F.**, 94.
- Morrison, Robert J.** See **Burnett, Michael G.**, 632, 701.
- Moseley, P. T., and Shearer, H. M. M.** Alkylzinc compounds. Part I. Crystal structure of ethylzinc iodide, 64.
- Moseley, Patrick T., and Seabrook, Cathleen J.** Some observations on the isothermal dehydration of uranyl(VI) nitrate hexahydrate above room temperature, 1115.
- Moseley, Patrick T.** See also **Brown, David**, 686.
- Moser, Wolf.** See **Howie, R. Alan**, 1478.
- Moss, John R., Green, Michael, and Stone, F. Gordon A.** Chemistry of the metal carbonyls. Part LXVII. Hydroxycarbene complexes of manganese(I), 975.
- Moss, Kenneth C.** See **Dixon, Keith R.**, 1528, and **Fowles, Gerald W. A.**, 1871.
- Mossop, W. J.** See **Lockhart, J. C.**, 19, 662.
- Mowat, Walter, and Wilkinson, Geoffrey.** Elimination stabilized alkyls. Part III. Trimethylsilylmethyl and neopentyl alkyls of transition metals, 1120.
- Mowat, Walter, Shortland, Anthony J., Hill, Nicholas J., and Wilkinson, Geoffrey.** Elimination stabilized alkyls. Part II. Neopentyl and related alkyls of chromium(IV), 770.
- Müller, Herbert.** See **Granifo, Juan**, 1891.
- Murakami, Yukito, Matsuda, Yoshihisa, and Kobayashi, Sho-Ichiro.** Transition-metal complexes of pyrrole pigments. Part VII. Cobalt(II) and zinc(II) chelates of some tripyrrene-*b* and bilene-*b* ligands, 1734.
- Murakami, Yukito, Matsuda, Yoshihisa, Sakata, Kazunori, and Martell, Arthur E.** Transition-metal complexes of pyrrole pigments. Part VI. Some bivalent metal complexes of 3,3',4,4'-tetrachloro-5,5'-diethoxycarbonyldi-pyrromethene, 1729.

- Murati, I. See Pavlović, D., 602, and Žmikić, A., 1284.
 Murray, Keith S., and Sheahan, Robert M. Mixed-valence complexes of vanadium with 1,10-phenanthroline and 2,2'-bipyridine, 1182.
 Murray, Keith S. See also Davies, John E., 2523.
 Murray, Robin S. See Scott, Keith L., 2335.
 Murray-Rust, Judith. See Clay, R. M., 595.
 Murray-Rust, P. See Clay, R. M., 595.

N

- Naik, Dinker G. See Clark, E. Roy, 1961.
 Nardelli, M. See Corradi, A. Bonamartini, 655.
 Nardelli, Mario. See Mangia, Alessandro, 1141.
 Nardin, G. See Calligaris, M., 419.
 Natile, Giovanni. See Bor, György, 1308.
 Nave, Colin, and Truter, Mary R. Crystal structure of bromo[tris(2-vinylphenyl)phosphine]rhodium(I), 2202.
 Nave, Colin. See also Fenton, David E., 2188.
 Neild, D. J. See Dickens, P. G., 30, 1074.
 Nelson, John H. See Wheelock, Kenneth S., 1457.
 Nelson, S. Martin, Sloan, Malcolm, and Drew, Michael G. B. Transition-metal complexes of 1,3-dienes. Part I. Synthesis and structure of rhodium(I) complexes, 2195.
 Nelson, S. M. See also Drew, Michael G. B., 1484.
 Newkirk, Herbert W. Observations on dislocations in tetraphenyltin and its isomorphs, 12.
 Newlands, Michael J. See Clase, Howard J., 2546.
 Newman, Josephine, and Manning, A. R. Structures and some reactions of π -diene derivatives of octacarbonyldicobalt, 1593.
 Newman, Peter W. G., Raston, Colin L., and White, Allan H. Crystal structures of bis(pyrrolidonecarbodiimato)-nickel(II) and -copper(II), 1332.
 Newton, David A. See Glentworth, Peter, 546.
 Nicholls, David, and Seddon, Kenneth R. Reactions of vanadium(V) oxide tribromide: preparation and properties of complex oxobromovanadates(IV), 2747.
 Reactions of vanadium(V) oxide tribromide: preparation and properties of vanadium(IV) oxide dibromide complexes, 2751.
 Nichols, Alan L. See Glentworth, Peter, 546, 969, 2364.
 Nichols, J. M. See Hägele, G., 79.
 Nicholson, David G. See Donaldson, John D., 1810.
 Nicol, Alastair W. See Kennedy, John F., 1129.
 Nivellini, G. D. See Biscarini, P., 159.
 Nixon, J. F. See Clement, D. A., 195.
 Nixon, John F. Photoelectron spectra and bonding in metal-trifluorophosphine complexes, 2226.
 Nixon, John F. See also Jefferson, Robin, 1414.
 Nolan, Kevin B., Coles, Brian R., and Hay, Robert W. Base hydrolysis of amino-acid esters and amides in the co-ordination sphere of cobalt(III). Part II. Hydrolysis of 2-aminoethyl acetate, 2503.
 Nor, Othman, and Sykes, A. Geoffrey. Kinetics of complexing of oxalate to penta-ammineaquochromium(III), 1232.
 Nor, Othman, Lethbridge, James W., and Sykes, A. Geoffrey. Reaction of tetra-aquoethylenediaminechromium(III) with oxalate, 1758.
 Norton, Michael G. See Goggin, Peter L., 2220.
 Nunn, E. K. See Hilton, J., 173.
 Nutt, Michael O. See Mague, Joel T., 2578.

- Nuttall, Robert H. See Cameron, A. Forbes, 2130, and Mooney, Arthur, 1920.
 Nyburg, Stanley C. See Harris, Ronald O., 2646.
 Nyholm, Ronald S. See Bradford, C. W., 529.

O

- Occupati, Gianfranco, and Pratt, Leslie. Some reactions of the carbonyl group in co-ordinated keto-carboxylates, 1699.
 O'Daly, C. See Brown, David A., 1311.
 Odell, Allan L. See Matthews, K. Murray, 1145.
 Ogden, J. S. See Darling, J. H., 1079.
 Ogilvie, Dorothy M. W. See Matts, Terence C., 992.
 Oldham, Colin, and Ketteringham, Antony P. Structural conclusions concerning compounds with rhenium-rhenium multiple bonds, 2304.
 Oldham, Colin. See also Ketteringham, Antony P., 1067.
 Oleari, Luigi. See Day, Peter, 2595.
 Oliver, Andrew J. See White, Colin, 1901.
 Olsen, J. See Fenger, Jes, 563.
 Onak, Thomas, Bross, Kenneth, Tse, James, and Howard, James. Studies on cyclic organotetraborane derivatives, 2633.
 Onak, Thomas, Howard, James, and Brown, Costello. Negative-ion mass spectrometry of *cis*-carboranes, 76.
 Onak, Thomas, Lockman, Bill, and Haran, Gerrard. Chemical and structural studies on the 2,4- and 2,3-isomers of the dicarba-*nido*-hexaborate(1-) ion, $C_2H_4B_7^-$, and some dipolar derivatives, 2115.
 Orchard, David G. See Lloyd, Malcolm K., 1743.
 Orioli, P. L. See Orlandini, A. Bianchi, 1383.
 Orlandini, A. Bianchi, Calabresi, C., Ghilardi, C. A., Orioli, P. L., and Sacconi, L. X-Ray investigations on spin-state equilibria. Crystal and molecular structure of two five-co-ordinate cobalt(II) complexes with an N_4P donor set, 1363.
 Ostaszewski, Andrew P. P. See Bruce, Michael I., 2433.
 Otsuka, Sei, Tani, Kazuhide, and Yamagata, Tsuneaki. Reaction paths and mechanisms in the catalytic cycloaddition of allene over nickel(0) template systems, 2491.
 Ozari, Y., and Jagur-Grodzinski, J. Complexes of bromine with hexamethylphosphoric triamide (HMPA) and with its polymeric analogue poly-HMPA, 474.

P

- Paddock, Norman L. See Calhoun, Harry P., 2708.
 Painter, Terence M. See Jefferson, Robin, 1414.
 Palmer, Dorothy E. See Çetinkaya, Bekir, 1202, and Lappert, Michael F., 151, 157.
 Palmieri, C. Grasselli. See Corradi, A. Bonamartini, 655.
 Panayotou, Maria. See Marangoni, Gianpaolo, 1989.
 Paoletti, Piero. See Barbucci, Rolando, 1763.
 Parish, R. V., and Rowbotham, P. J. Studies in Mössbauer spectroscopy. Part VI. Tin-119 spectra of some trichlorostannyl transition-metal complexes, 37.
 Parker, Graham J. See Green, Michael, 2099.
 Parker, William. See Howie, R. Alan, 1478.
 Parrett, Frederick W. See Bullock, Joseph I., 522.
 Pasini, Alessandro. See Busetto, Carlo, 754.
 Passmore, Jack. See Desjardins, C. David, 2314, Dunphy, Richard F., 2533, and Lau, Clement, 2528, 2535.

- Patel, H. A. See Beran, G., 488.
- Patterson, Dennis B. See Dewar, Michael J. S., 2381.
- Pavlović, D., Murati, I., and Ašperger, S. Kinetics and mechanisms of replacement of nitrosobenzene in the pentacyano(nitrosobenzene)ferrate(II) ion by cyanide ion, 602.
- Pavlović, D. See also Bradić, Zdravko, 2514, Pribanić, Marijan, 2518, and Žmikić, A., 1284.
- Pawson, David. See Griffith, William P., 524, 1315.
- Payne, Douglas S. See Mokuolu, Joseph A. A., 1443.
- Peacock, Graeme J. See Armstrong, Robert S., 1132.
- Peacock, R. D. See Mason, S. F., 226.
- Peacock, Raymond D. See Burgess, John, 501, 902.
- Pearce, R. See Collier, M. R., 445.
- Peart, Barry J. See Harding, Michael J., 955, and Mason, Stephen F., 944, 949.
- Pelizzetti, Ezio. See Mentasi, Edoardo, 2605, 2609.
- Pelizzi, Corrado. See Mangia, Alessandro, 1141, 2557.
- Pelizzi, Giancarlo. See Biscarini, P., 159, and Mangia, Alessandro, 1141, 2557.
- Pellacani, Gian Carlo. See Peyronel, Giorgio, 879.
- Pellinghelli, M. A. See Corradi, A. Bonamartini, 655.
- Pellizer, G., Tauszik, G. R., and Costa, G. Interactions of a vitamin B₁₂ model complex with amino-acids and oligopeptides. A visible and nuclear magnetic resonance spectroscopic study, 317.
- Perkins, Peter G. See Armstrong, David R., 627, 838, 2273, 2277.
- Peterson, M. B. and Wagner, A. J. Crystal structure of compounds with (N-P)_n rings. Part XI. 1,2,3,4-Tetraphenyl-2,4-dithiocyclodiphosphazane, [PhNP(S)Ph]₂, 106.
- Petillon, Françoise, Guerchais, Jacques E., and Goodgame, David M. L. Iron(II) and copper(I) complexes with some substituted 1,2-dithiole-3-thiones, 1209.
- Petković, Djordje M., Ruvarac, Aleksandar Lj., Konstantinović, Jovan M., and Trujić, Vlastimir K. Thermodynamics of extraction equilibria. Part II. Extraction of uranyl nitrate and chloride with trioctylphosphine oxide, 1649.
- Petric, Alexander M. See Burgess, John, 902.
- Peyronel, Giorgio, Pellacani, Gian Carlo, Benetti, Giuseppe, and Pollacci, Giordano. Nickel(II) complexes with dithiomalonamide and NN'-diphenyldithiomalonamide, 879.
- Phillips, Courtenay S. G. See Hadzisteliou, Isidore, 2159.
- Phillips, Raymond F. See Evans, Dennis F., 978.
- Pickard, F. H. See Harris, Ronald O., 2646.
- Pidcock, Alan. See Lynden-Bell, Ruth M., 715, and Mather, Gary G., 560, 823, 2095.
- Pietropaolo, R. See Faraone, F., 1625.
- Pietropaolo, Rosario. See Mann, Brian E., 2390.
- Pilbrow, John R. See Toy, Alfred D., 1259, 2498.
- Pilbrow, M. F. See Gillard, R. D., 102.
- Piovesana, Olivo. See Furlani, Claudio, 2404.
- Piraino, P. See Faraone, F., 1625.
- Podmore, L. P., Smith, P. W., and Stoessiger, R. Acetic acid complexes of vanadium(III) and titanium(III), 209.
- Poland, John S. See Contreras, J. Guillermo, 922.
- Poliakoff, Martyn, and Turner, James J. Infrared spectra and photochemistry of the complex pentacarbonyliron in solid matrices at 4 and 20 K: evidence for formation of the complex tetracarbonyliron, 1351.
- Poliakoff, Martyn. See also Crichton, Oliver, 1321.
- Pollacci, Giordano. See Peyronel, Giorgio, 879.
- Poon, Chung-Kwong, and Tong, Ha-Wai. Structural and mechanistic studies of co-ordination compounds. Part VI. Preparation, aquation, and base hydrolysis of some octahedral *trans*-chlorocyanocobalt(III) amine complexes, 1301.
- Poonia, Narinda S., and Truter, Mary R. Complexes of alkali-metal salts, including those of chelating anions, with four macrocyclic 'crown' ethers, 2062.
- Pope, Janet M. See Ball, Matthew C., 1802.
- Porritt, C. J. See Aylett, B. J., 83.
- Porritt, Christopher J. See Allan, Mellis, 2675.
- Porte, Andrew L. See Stewart, Charles P., 722.
- Post, Michael L. See Irving, Roger J., 697.
- Povey, David C. See Irving, Roger J., 697.
- Powell, H. Kipton J. Entropy titrations: a reassessment of data for the reaction of the sulphate ion with protons and with bivalent metal ions, 1947.
- Powell, H. Kipton J. See also Hedwig, Gavin R., 793, 798, 1942.
- Power, Paedar C. See Dudley, Richard J., 1044.
- Pratt, Leslie. See Occupati, Gianfranco, 1699.
- Previtali, Carlos M. See Fernández, Hector, 2090.
- Pribanić, Marijan, Biruš, M., Pavlović, D., and Ašperger, S. Mechanism of octahedral substitutions. Part IX. Grunwald-Winstein treatment of spontaneous aquation of *trans*-chloronitro- and *trans*-dichloro-bisethylenediaminecobalt(III) ions in mixed aqueous solvents, 2518.
- Pribanić, Marijan. See also Bradić, Zdravko, 2514.
- Prout, C. Keith. See Cameron, T. Stanley, 1590, 2626.
- Prue, John E. See Henry, R. Peter, 1156.
- Puddephatt, R. J. See Hewitt, Bernard J., 801.
- Puxeddu, A. See Costa, Giacomo, 2034.
- Puxley, David C. See Donaldson, John D., 1810.

R

- Radford, Donald V. See Hayes, John W., 1101.
- Ramunni, Girolamo. See Gattegno, Daniela, 1399.
- Randaccio, L. See Calligaris, M., 419.
- Randall, Edward W., Rosenberg, Edward, and Milone, Luciano. Some applications of ¹³C-Fourier nuclear magnetic resonance to stereochemical problems of transition metal-olefin complexes, 1672.
- Randall, Edward W. See also Braterman, Paul S., 1027, and Cardin, David J., 1982.
- Rankin, David W. H. See Anderson, Duncan W. W., 854, 1215, 2370.
- Rankin, Jennifer M. See Gardner, E. Roy, 1340.
- Rao, K. V. S., and Symons, Martyn C. R. Unstable intermediates. Part CXXIII. Electron spin resonance spectra of radicals in γ -irradiated sulphuryl chloride: the SO₂Cl₂⁻ radical, 9.
- Rapsey, Graham J. N. See Mather, Gary G., 2095.
- Raston, C. L. See Brotherton, P. D., 334.
- Raston, Colin L. See Dewan, John C., 2082, and Newman, Peter W. G., 1332.
- Reay, Brian R. See Baker, Edward N., 2205.
- Reed, Christopher A., and Roper, Warren R. Four- and five-co-ordinate nitrosyl complexes of iridium(I), 1014.
- The iridium(I) cation, [Ir(CO)(CH₃CN)(PPh₃)₂]⁺ and its substitution reactions, 1365.
- Members of the series IrX(CO)(PPh₃)₂ with various anionic ligands and their dioxygen complexes, 1370.

- Reimann, Rolf H., and Singleton, Eric. Reactions of metal carbonyls. Part III. Steric and stereochemical limitations of higher substitution of manganese carbonyl bromide. Part V. Reaction of a series of substituted manganese carbonyl bromide compounds with nitrosonium hexafluorophosphate, 841, 2658.
- Reis, Arthur H., jun. See Churchill, Melvyn Rowen, 1570.
- Reisenhofer, E. See Costa, Giacomo, 2034.
- Rempel, Garry L. See Byerley, John J., 889, and James, Brian R., 2247.
- Rendall, Ian F. See Bradley, Donald C., 2228.
- Rendle, David F., Storr, Alan, and Trotter, James. The crystal and molecular structure of a dideuterio(pyrazol-1-yl)gallane dimer, 2252.
- Rest, Antony J. See Crichton, Oliver, 1321.
- Reynolds, W. See Žmikić, A., 1284.
- Rice, D. A. See McCaffery, A. J., 1605.
- Rice, David A. See Fowles, Gerald W. A., 961, 1871.
- Richards, Raymond L. See Chatt, Joseph, 1167, 1433.
- Richards, Roger. See Edwards, Dennis A., 2463.
- Richmond, John R. See Aylett, Bernard J., 981, 1523.
- Ridley, David C. See Green, Brian, 1042.
- Riedl, Michael J. See Drew, Michael G. B., 52.
- Riess, Jean G. See Santini-Scampucci, Catherine, 2436.
- Rivest, Roland. See Makhija, Ramesh C., 2447.
- Robertson, A. See Craddock, S., 22.
- Robertson, Andrew J. B. See Ardrey, Robert E., 2641.
- Robertson, Glen B., and Whimp, Peter O. Structure of a stable iron(0) mono-olefin chelate complex with 2-vinylphenyldiphenylphosphine: dicarbonylbis[(2-vinylphenyl)diphenylphosphine]iron(0), 2454.
- Robertson, I. C. See Jeffreys, J. A. D., 749.
- Robinson, Brian H. See Dolby, Rex, 1794.
- Robinson, Bruce William. See Field, Ross Anthony, 1858.
- Robinson, Stephen D., and Uttley, Michael F. Complexes of the platinum metals. Part II. Carboxylato(triphenylphosphine) derivatives of ruthenium, osmium, rhodium, and iridium, 1912.
- Robinson, Stephen D. See Ahmad, Naseer, 1148, 1151, and Laing, Kerry R., 2713.
- Robinson, William T. See Long, Gary J., 573.
- Rodger, Martin. See Anderson, John W., 1716.
- Rogers, David E. See Alcock, Roland M., 1070.
- Rogers, Keith A. See Fitzsimmons, Brian W., 676.
- Rogstad, Astri. See Gardner, Margaret, 599.
- Rolfe, Nicholas. See Fowles, Gerald W. A., 1871.
- Roper, Warren R. See Reed, Christopher A., 1014, 1365, 1370.
- Rose, J. C. W. See Dickens, P. G., 30.
- Rosenberg, Edward. See Braterman, Paul S., 1027, Cardin, David J., 1982, and Randall, Edward W., 1672.
- Ross, Sidney D. See Donaldson, John D., 1985.
- Rossotti, Francis J. C. See Cameron, T. Stanley, 1590, 2626, and Dillon, Keith B., 1005.
- Rothrock, Richard K. See Kubota, Mitsuru, 1267.
- Rotilio, Giovanni. See Attanasio, Donato, 2242.
- Rowbotham, P. J. See Parish, R. V., 37.
- Rowe, M. D. See McCaffery, A. J., 1605.
- Royston, Geoffrey H. D. See Chatt, Joseph, 1433.
- Ruiz-Ramirez, Lena, Stephenson, T. Anthony, and Switkes, Ellen S. New ruthenium(III) and ruthenium(II) complexes containing triphenyl-arsine and -phosphine and other ligands, 1770.
- Ruiz-Ramirez, Lena. See also Stephenson, T. Anthony, 2112.
- Ruvarac, Aleksandar Lj. See Petković, Djordje M., 1649.
- Ryan, F. J. See Finch, Arthur, 1863.
- Rycroft, David S. See McFarlane, William, 2162.

S

- Sacconi, L. See Bianchi, A., 641, and Orlandini, A. Bianchi, 1383.
- Sadavoy, Lyle S. See Harris, Ronald O., 2646.
- Sadler, Peter J. See Hill, H. Allen O., 1663, 1805.
- Sadler, William A., and House, Donald A. Synthesis of some phenyl-substituted stilbenediamines and their complexes with nickel(II), 1937.
- Saini, Guido. See Mentasi, Edoardo, 2609.
- Sakata, Kazunori. See Murakami, Yukito, 1729.
- Salama, S. B. See Wasif, Saad, 2148.
- Sales, Keith D. See Alyea, E. C., 185, and Bradley, Donald C., 191, 2228.
- Samuni, A., and Czapski, G. Reaction of cerium(IV) perchlorate with hydrogen peroxide, 487.
- Sanders, J. Roger. Preparation of hydridotetrakis(triphenylphosphine)ruthenium(II) hexafluorophosphate and related complexes, 743.
- Paramagnetic hydrido-complexes of cobalt(II), 748.
- Sansoni, M. See Albano, V. G., 651.
- Sansoni, Mirella. See Bellon, Pierluigi, 2423.
- Santini-Scampucci, Catherine, and Riess, Jean G. Preparation of monomethyl-niobium(V) and -tantalum(V) halides and of some of their complexes, 2436.
- Sanz, Francisco, and Daly, John J. Crystal and molecular structure of 2,3,6-triphenylarsenin, 511.
- Sanz, Francisco. See also Daly, John J., 73, 1497, 2032, 2474.
- Savory, C. G., and Wallbridge, M. G. H. Reaction of pentaborane(9) with charged and neutral ligand species. A new synthesis of the tetradecehydrononaborate(1-) ion, $B_9H_{14}^-$, 179.
- Saxby, John D. See Hayes, John W., 1101.
- Scaramuzza, Lucio. See Bonamico, Mario, 876.
- Scharpen, LeRoy H. See Tolman, Chadwick A., 584.
- Schmutzler, Reinhard. Phosphorus-fluorine chemistry. Part XXIX. Reaction of aminosilanes and N-alkyl(or aryl)hexamethyldisilazanes with fluorophosphoranes: chemical and spectroscopic studies on dialkylaminofluorophosphoranes and fluoro-1,3,2,4-diazadiphosphetides, 2687.
- Schneider, M. L., and Shearer, H. M. M. Crystal structure of trans-chlorohydridobis(triethylphosphine)palladium, 354.
- Schultz, Ronald A. See Irving, Roger, J., 2414.
- Scott, Keith L., and Sykes, A. Geoffrey. Reduction of tetranuclear μ -oxalato-cobalt(III) complexes by the ions chromium(II) and vanadium(II), 736.
- Scott, Keith L., Murray, Robin S., Higginson, William C. E., and Foong, Siew-Wan. Mixed iron-cobalt binuclear complexes. Part I. Identification of mixed complexes derived from trans-[Co(en)₃(H₂O)(SO₃)]⁺, 2335.
- Seabrook, Cathleen J. See Moseley, Patrick T., 1115.
- Sears, Paul L. See Mays, Martin J., 1873.
- Seccombe, R. C. See Shields, K. G., 741.
- Seddon, Duncan. See Frisch, P. Douglas, 2268.
- Seddon, Kenneth R. See Nicholls, David, 2747, 2751.
- Segal, Geoffrey. See Bagnall, Kenneth W., 2682.

- Segal, J. A. See Johnson, Brian F. G., 478.
- Sellers, Robin M. See Ellis, J. David, 1724.
- Sgamellotti, A. See Furlani, Claudio, 2404.
- Shanker, R. See McAuley, Alexander, 2321.
- Sharma, Prem Dutt, and Gupta, Yugal K. Stoichiometry and kinetics of the reaction between thallium(III) and antimony(III) ions in perchloric acid solution, 789.
- Sharma, Santosh K., Glasser, Lesley S. Dent, and Masson, Charles R. Trimethylsilyl derivatives for the study of silicate structures. Part III. Sodium silicate hydrates, 1324.
- Sharp, D. W. A. See Davidson, J. L., 1957, and Majid, A., 1876.
- Sharp, David W. A. See Darragh, John I., 2289.
- Shaw, B. L., and Shaw, G. Transition metal-carbon bonds. Part XXXII. Hexamethyl Dewar benzene; dehydrohexamethyl Dewar benzene and related complexes of platinum(II), 264.
- Shaw, B. L. See also Brookes, P. R., 783, and Gill, D. F., 270, 311.
- Shaw, Bernard L., and Stainbank, Robin E. Transition metal-carbon bonds. Part XXXV. Internal metallation of *t*-butyldi-*o*-tolylarsine and di-*t*-butyl-*o*-tolylarsine by platinum, 2394.
- Shaw, Bernard L. See also Douglas, Philip G., 2078, and Mann, Brian E., 2390.
- Shaw, G. See Shaw, B. L., 264.
- Shaw, Gordon. See Bruce, Michael I., 1667.
- Shaw, Robert A. See Biddlestone, Malcolm, 2740, Carroll, Anthony P., 2736, Das, Rabindranath N., 709, and Das, Sunilkumar, 1883.
- Sheahan, Robert M. See Murray, Keith S., 1182.
- Shearer, H. M. M. See Moseley, P. T., 64, and Schneider, M. L., 354.
- Shearer, Harrison M. M., and Sowerby, J. David. Crystal structure of dicarbonyl(π -cyclopentadienyl)[di-(*t*-butyl)methyleneamino]molybdenum(II), 2629.
- Sheldrick, William S. Crystal structure of 2-methyl-5-(tetrafluorophosphoranyl)pyrrole, 2301.
- Sheldrick, William S., and Stelzer, Othmar. Preparation, crystal and molecular structure of *trans*-dibromobis[di-(*t*-butyl)fluorophosphine]nickel(II), 926.
- Shepherd, T. M. See Brown, T. D., 336.
- Sheridan, P. S. See Gidney, P. M., 1462.
- Sherwood, Peter M. A. See Green, Brian, 1042.
- Shields, K. G., Seccombe, R. C., and Kennard, C. H. L. Stereochemistry of flexible-chelate-metal complexes. Part III. Crystal structure of dihydrogen ethylenediaminetetra-acetatostannate(II), 741.
- Shortland, Anthony J., and Wilkinson, Geoffrey. Preparation and properties of hexamethyltungsten, 872.
- Shortland, Anthony J. See also Mowat, Walter, 770.
- Siekierska, Krystyna E., Fenger, Jes, and Maddock, Alfred G. The fate of recoil-⁵⁹Fe in an iron double complex specifically enriched with ⁵⁹Fe, 1086.
- Siekierska, K. E. See also Fenger, Jes, 563.
- Siew, Pik-Yuen. See Lau, Clement, 2535.
- Silver, Jack. See Donaldson, John D., 666, 1985.
- Silverthorn, William E. See Green, Malcolm L. H., 301, 1403, 1952, 2177.
- Sime, J. G. See Jeffreys, J. A. D., 749.
- Simpson, S. R. See Middleton, R., 120.
- Simpson, W. Irven. See Dewar, Michael J. S., 2381.
- Singleton, Eric. See Reimann, Rolf H., 841, 2658.
- Skamp, Keith R. See Armstrong, Robert S., 1132.
- Skapski, Andrzej C., and Stephens, Francis A. Crystal and molecular structure of trichlorotris(diethylphenylphosphine)rhodium(III), 1789.
- Skapski, Andrzej C. See also de Meester, Patrice, 424, 1194, 1596, 2575.
- Slade, Roger M. See Chatt, Joseph, 2021.
- Slinkard, William E., and Meek, Devon W. Co-ordination properties of methylenebis(diphenylphosphine chalcogenides) with cobalt(II), nickel(II), and palladium(II), 1024.
- Sloan, Malcolm. See Drew, Michael G. B., 1484, and Nelson, S. Martin, 2195.
- Smith, Anthony W. See Fitzsimmons, Brian W., 676.
- Smith, Barry C. See Das, Rabindranath N., 709, and Das, Sunilkumar, 1883.
- Smith, B. E. See Davies, N., 162.
- Smith, D. L. See Coates, G. E., 618.
- Smith, Derek W. Symmetry-restricted covalence in ligand field theory. Part I. The relative energies of the ²B_{2g} and ²E_g states in tetra-amminecopper(II) compounds, 1853.
- Smith, Karl D. See Atwood, Jerry L., 2487.
- Smith, Martin A. R. See Dixon, Keith R., 1528.
- Smith, P. W. See Podmore, L. P., 209.
- Smith, Thomas D. See Boyd, Peter D. W., 1549, and Toy, Alfred D., 1259, 2498.
- Smith, W. Ewen. See Mooney, Arthur, 287, 1920.
- Sneeden, Raymond P. A. See Daly, John J., 73, 1497.
- Sowerby, D. Bryan. See Millington, Douglas, 396, 2649.
- Sowerby, J. David. See Shearer, Harrison M. M., 2629.
- Speakman, J. Clare. See Mokuolu, Joseph A. A., 1443.
- Spencer, A. See Evans, I. P., 204.
- Spencer, Alwyn. See Mitchell, Robert W., 846, and Uemura, Sakae, 2565.
- Spivack, Bruce, and Dori, Zvi. Crystal and molecular structure of dicaesium μ -(ethylenediaminetetra-acetato)-di- μ -sulphido-bis[oxomolybdate(V)] dihydrate, 1173.
- Spratley, Richard D. See Burdett, Jeremy K., 1928.
- Srivastava, R. C. See Coates, G. E., 618.
- Stainbank, Robin E. See Shaw, Bernard L., 2394.
- Staples, Peter J. See Humphreys, Derek, 897.
- Starkie, Haydn C. See Booth, Robert J., 2233.
- Starks, Richard G. See Howie, R. Alan, 1478.
- Steele, David. See Cameron, T. Stanley, 1590, 2626.
- Steele, David F., and Stephenson, T. Anthony. Metal complexes of sulphur ligands. Part IV. Reaction of bis-(dialkylphosphinodithioato)-platinum(II) and -palladium(II) with ligands containing Group VB atoms, 2124.
- Stelzer, Othmar, and Unger, Eugen. Alkyl- and aryl-fluorophosphines as ligands in transition-metal complexes with metals in positive oxidation states. Part I. Nickel(II) and cobalt(II) halide complexes of di-(*t*-butyl)-fluorophosphine, 1783.
- Stelzer, Othmar. See also Sheldrick, William S., 926.
- Stephens, Francis A. See Skapski, Andrzej C., 1789.
- Stephens, Frederick S., and Tucker, Paul A. Crystal and molecular structure of chlorobis(2,2'-bipyridyl)copper(II) chloride hexahydrate, 2293.
- Stephenson, T. A. See Alison, J. M. C., 254.
- Stephenson, T. Anthony, Switkes, Ellen S., and Ruiz-Ramirez, Lena. (Bicyclo[2.2.1]hepta-2,5-diene)carbonyl-trihalogenoruthenate(II) complexes, 2112.
- Stephenson, T. Anthony. See also Ruiz-Ramirez, Lena, 1770, and Steele, David F., 2124.

- Stewart, Charles P., and Porte, Andrew L. Electron paramagnetic resonance spectra of the bis(π -cyclopentadienyl)vanadium(IV) and bis(π -cyclopentadienyl)niobium(IV) complexes (π -C₅H₅)₂VX₂ and (π -C₅H₅)₂NbX₂, 722.
- Stewart, James J. P. See Armstrong, David R., 627, 838, 2273, 2277.
- Stobart, S. R. See Mackay, K. M., 214.
- Stobart, Stephen R. See Angus, Philip C., 2374, Burnham, Richard A., 1269, Glockling, Frank, 2029, and Harrison, Phillip G., 940.
- Stobbs, Leslie. See Jefferson, Robin, 1414.
- Stoessiger, R. See Podmore, L. P., 209.
- Stokes, F. C. See Beattie, I. R., 465.
- Stone, F. Gordon A. See Browning, J., 381., Bruce, Michael I., 1667, Clemens, John, 375, 1620, George, Raymond D., 972, Maples, Peter K., 388, 2069, and Moss, John R., 975.
- Stone, J. V., and Townshend, A. Determination of traces of copper by activation of water-insoluble apopolyphenol oxidase, 495.
- Storr, Alan. See Rendle, David F., 2252.
- Straughan, Brian P. See Brown, J. David, 1691, and Dobbie, Robert C., 2754.
- Strugnell, Christopher J. See Burnett, Michael G., 701.
- Sutton, D. See Einstein, F. W. B., 434.
- Swann, David A. See Curtis, Neil F., 1408, 1963, and King, Adrian W., 1819.
- Sweeney, John J. See Glockling, Frank, 2029.
- Switkes, Ellen S. See Ruiz-Ramirez, Lena, 1770, and Stephenson, T. Anthony, 2112.
- Syal, V. K. See Jain, Prem C., 1908.
- Sykes, A. G. See Wharton, R. K., 439.
- Sykes, A. Geoffrey. See Edwards, Julian D., 829, Ellis, J. David, 537, 1724, 2553, Foong, Siew-Wan, 504, Hyde, Michael R., 2730, Nor, Othman, 1232, 1758, and Scott, Keith L., 736.
- Symon, David A., and Waddington, Thomas C. The liquid hydrogen chloride solvent system. Part XV. Reactions of the tetrakis(carbonyl(π -cyclopentadienyl)iron(II)) complex, 1879.
- Symons, Martyn C. R., and Wilkinson, James G. Electron spin resonance studies of γ -irradiated potassium hexacyanoferrate(II) in various host lattices, 14. Electron spin resonance studies of γ -irradiated hexacyanoruthenate(II) ions in various host lattices, 965.
- Symons, Martyn C. R. See also Booth, Robert J., 2233, Ginns, Ian S., 3, 2509, Mishra, S. P., 1494, and Rao, K. V. S., 9.
- T**
- Tamaki, Akihiro, and Kochi, Jay K. Reactions of dialkylaurate(I) with electrophiles: synthesis of trialkylgold(III) compounds, 2620.
- Tan, Kang Hai. See Evans, Christopher A., 988.
- Tani, Kazuhide. See Otsuka, Sei, 2491.
- Tani, M. E. Vidoni. See Corradi, A. Bonamartini, 655.
- Tapper, Spencer P. See Evans, Christopher A., 988.
- Tappmeyer, Wilbur P. See Long, Gary J., 573.
- Tarama, Kimio. See Funabiki, Takuzo, 1813.
- Tauszik, G. R. See Pellizer, G., 317.
- Taylor, Brian F. See Goggin, Peter L., 2220, and Goodfellow, Robin J., 2450.
- Taylor, Derek W. See Cameron, A. Forbes, 2130.
- Taylor, Donald. See Dewar, John C., 2082, Healy, Peter C., 646, and Kepert, David L., 392, 670, 893, 1658.
- Taylor, F. B., and Wilkins, T. A. Tris(quinolin-8-olato)-titanium(III). A distorted octahedral monomer with an orbitally non-degenerate ground state, 87.
- Taylor, Michael J. See Evans, Christopher A., 988.
- Taylor, Nicholas J. See Bullock, Joseph I., 522.
- Taylor, Peter. See Edwards, Anthony J., 2150.
- Taylor, R. C. See Kolodny, R. A., 328, and Morris, T. L., 175.
- Taylor, Roger S. See Hyde, Michael R., 2730.
- Tchir, Peter. See Burdett, Jeremy K., 1928.
- Thornhill, D. J., and Manning, A. R. Reactions of octacarbonyldicobalt with some ditertiary phosphines and arsines, 2086.
- Thornton, Andrew T., and Laurence, Gerald S. Kinetics of oxidation of transition-metal ions by halogen radical anions. Part I. The oxidation of iron(II) by dibromide and dichloride ions generated by flash photolysis. Part II. The oxidation of cobalt(II) by dichloride ions generated by flash photolysis, 804, 1632.
- Thornton, Andrew T. See also Laurence, Gerald S., 1637.
- Tieghi, Giuseppe. See Zocchi, Marcello, 883.
- Timms, P. L. See Middleton, R., 120.
- Tipping, A. E. See Crossman, J. M., 483.
- Tisley, D. G. See Hamer, A. D., 116, and Hoof, D. L., 200.
- Tisley, David G., and Walton, Richard A. Complex halides of the transition metals. Part XIV. The X-ray photoelectron spectra of mononuclear and dinuclear complex halides of rhenium(III) and rhenium(IV), and of the Re(NCS)₆²⁻ and Re₂(NCS)₈²⁻ complex anions, 1039.
- Tisley, David G. See also Matthews, Raymond W., 1035.
- Tohe, Martin L. See Marangoni, Gianpaolo, 1989.
- Tolman, Chadwick A., and Scharpen, LeRoy H. Application of microwave spectroscopy to the mechanism of hydrogen-deuterium exchange in propene by homogeneous catalysts, 584.
- Tomkins, I. B. See Bennett, M. A., 166.
- Tomlinson, C. H. See Middleton, R., 120.
- Tong, Ha-Wai. See Poon, Chung-Kwong, 1301.
- Tong, S. B. See Bottomley, F., 217.
- Touche, Murray L. D. See Corrie, Anna M., 2561.
- Townshend, A. See Stone, J. V., 495.
- Toy, A. David. See Boyd, Peter D. W., 1549.
- Toy, Alfred D., Hobday, Malcolm D., Boyd, Peter D. W., Smith, Thomas D., and Pilbrow, John R. An electron spin resonance study of the dimeric form of some copper(II) Schiff-base complexes, 1259.
- Toy, Alfred D., Smith, Thomas D., and Pilbrow, John R. An electron spin resonance study of the copper(II) chelates of cyclobutane-1,1-dicarboxylic acid and their mixed ligand chelates, 2498.
- Trotter, J. See Harrison, W., 61.
- Trotter, James. See Bear, Cedric A., 673, 2285, Calhoun, Harry P., 2708, and Rendle, David F., 2252.
- Trujić, Vlastimir K. See Petković, Djordje M., 1649.
- Truter, Mary R. See Fenton, David E., 2188, Mercer, Mary, 2215, 2469, Nave, Colin, 2202, and Poonia, Narinda S., 2062.
- Tse, James. See Onak, Thomas, 2633.
- Tuck, D. G. See Einstein, F. W. B., 248, and Habeeb, J. J., 96, 243.
- Tuck, Dennis G. See Contreras, J. Guillermo, 922.
- Tucker, Paul A. See Stephens, Frederick S., 2293.
- Tucker, Philip M. See Allen, Geoffrey C., 470, 1675.

- Tun, Khin Mar. See **Birchall**, Thomas, 2521.
 Tune, David J. See **Eaborn**, Colin, 2255.
 Turner, James J. See **Burdett**, Jeremy K., 1928, **Crichton**, Oliver, 1321, and **Poliakoff**, Martyn, 1351.

U

- Uemura, Sakae, **Spencer**, Alwyn, and **Wilkinson**, Geoffrey. μ_3 -Oxotrimetal acetato-complexes of chromium, manganese, iron, cobalt, rhodium, and iridium, 2565.
 Ugo, Renato. See **Busetto**, Carlo, 754.
 Underhill, Mark. See **Deeming**, Antony J., 2589, 2727.
 Unger, Eugen. See **Stelzer**, Othmar, 1783.
 Uttley, Michael F. See **Laing**, Kerry R., 2713, and **Robinson**, Stephen D., 1912.

V

- Vacca, Alberto. See **Barbucci**, Rolando, 1763.
 Valenti, Venanzio. See **Busetto**, Carlo, 754.
 Van Wazer, John R. See **Bermann**, Manfred, 813.
 Vaughan, D. H. See **Addison**, A. W., 1187, and **Gidney**, P. M., 1462.
 Vidali, Maurizio. See **Bandoli**, Giuliano, 2331.
 Vigato, Pietro A. See **Bandoli**, Giuliano, 2331.
 Vuletić, Nikola, and **Djordjević**, Cirila. Co-ordination complexes of niobium and tantalum. Part XIV. Alkoxo-(2,2'-bipyridine)trichloroniobium(IV) complexes, 550.
 Oxodiperoxovanadate(V) complexes with bidentate ligands, 1137.

W

- Waddell, Robin E. See **Mason**, Stephen F., 944.
 Waddington, Thomas C. See **Symon**, David A., 1879.
 Wadley, L. G. B. See **Figgis**, B. N., 238.
 Wagner, A. J. See **Peterson**, M. B., 106.
 Walker, Peter J. C., and **Mawby**, Roger J. Formation and reactions of cyanocyclohexadienyl complexes of manganese(I), 622.
 Wallbridge, M. G. H. See **Davies**, N., 162, and **Savory**, C. G., 179.
 Wallwork, S. C. See **Hilton**, J., 173.
 Walton, David R. M. See **Eaborn**, Colin, 2255.
 Walton, R. A. See **Hamer**, A. D., 116, and **Hoof**, D. L., 200.
 Walton, Richard A. See **Matthews**, Raymond W., 1035, and **Tisley**, David G., 1039.
 Warnqvist, Björn. See **Davies**, Geoffrey, 900.
 Wasif, Saad, and **Salama**, S. B. Weak complexes of sulphur and selenium. Part II. Complex species of SO_2 , SOCl_2 , and SO_2Cl_2 with the thiocyanate ligand, 2148.
 Waters, Joyce M. See **Clark**, George R., 821.
 Waters, T. Neil. See **Curtis**, Neil F., 1408, 1537, 1963, **Hall**, David, 1508, **King**, Adrian W., 1819, and **Martin**, Dennis W., 2440.
 Waters, William A. See **Bridgart**, Glenn J., 1582.
 Watson, Kenneth J. See **Holt**, Elizabeth M., 2444.
 Watts, Donald W. See **Clare**, Brian W., 2476, 2479, 2481.
 Weakley, T. J. R. Heteropolyanions containing two different heteroatoms. Part III. Cobalto(II)undecapentaphosphate and related anions, 341.

- Weaver**, John, and **Woodward**, Peter. Crystal and molecular structure of di- μ -dimethylstannylene-bis(carbonyl- π -cyclopentadienylcobalt): a metal ring compound, 1060.

- Crystal and molecular structure of di- μ -carbonyl-*cis*- μ -(1-5- η : 1'-5'- η -dicyclopentadienyldimethylsilane)-bis(carbonyliron)(Fe-Fe), 1439.
Webb, G. A. See **Hunter**, P. W. W., 26.
Webster, Michael, and **Collins**, Paul H. Structural and thermochemical studies on Rb_2TeCl_6 and comparison with Rb_2SnCl_6 , 588.
Weissman, Aharon. See **Herbstein**, Frank H., 1701.
Welsh, W. A. See **Brill**, T. B., 357, and **Gearhart**, R. C., 359.
Weston, Alan F. See **Cragg**, Richard H., 568, 1054.
Wharton, R. K., and **Sykes**, A. G. Reactions of μ -hydroxo-dicobalt(III) complexes. Part VIII. Kinetic studies of the bridge cleavage of the μ -hydroxo-bis[penta-ammine-cobalt(III)] complex, 439.
Wheatley, P. J. See **Clegg**, W., 90.
Wheelock, Kenneth S., **Nelson**, John H., **Kelly**, J. Duncan, **Jonassen**, Hans B., and **Cusachs**, L. Chopin. Molecular orbital studies of platinum olefin and acetylene complexes: reactions and reaction mechanisms, 1457.
Whillans, Francis D. See **Hoskins**, Bernard F., 607.
Whimp, Peter O. See **Robertson**, Glen B., 2454.
White, Allan H. See **Brotherton**, Peter D., 334, 2338, 2696, 2698, **Dewan**, John C., 2082, **Field**, Ross Anthony, 1858, **Healy**, Peter C., 284, 646, **Kepert**, David L., 392, 670, 893, 1658, and **Newman**, Peter W. G., 1332.
White, Colin, **Oliver**, Andrew J., and **Maitlis**, Peter M. Pentamethylcyclopentadienyl-rhodium and -iridium complexes. Part VII. Mono-, di-, and tri- μ -hydrido-complexes, 1901.
Whiteford, R. Alastair. See **Cradock**, Stephen, 2401.
Whitfield, Harold J. Crystal structure of the β -form of tetra-arsenic trisulphide, 1737.
 Crystal and molecular structure of tetra-arsenic penta-sulphide, 1740.
Whitfield, Harold J. See also **Bastow**, Timothy J., 1739.
Whittaker, David. See **Dobbie**, Robert C., 2427.
Whittle, Kenneth R. See **Clark**, George R., 821.
Whyman, R. See **Drakesmith**, A. J., 362.
Wiegardt, Karl. Preparation and characterization of polynuclear cobalt(III) complexes with bridging carboxylato-ligands, 2548.
Wiegardt, Karl. See also **Baur**, Werner H., 2669.
Wiggins, R. A. See **Gillard**, R. D., 125.
Wilkins, John D. See **Drew**, Michael G. B., 1830, 2664, and **Fowles**, Gerald W. A., 961.
Wilkins, T. A. See **Taylor**, F. B., 87.
Wilkinson, G. See **Evans**, I. P., 204.
Wilkinson, Geoffrey. See **Brown**, Charles K., 929, **Hsieh**, Andrew T. T., 867, **Mitchell**, Robert W., 846, **Mowat**, Walter, 770, 1120, **Shortland**, Anthony J., 872, and **Uemura**, Sakae, 2565.
Wilkinson, James G. See **Symons**, Martyn C. R., 14, 965.
Williams, David R. Thermodynamic considerations in co-ordination. Part XIII. Formation constants for the glutamate- and serinate-proton, -manganese(II), -iron(II), -cobalt(II), -nickel(II), -copper(II), and -zinc(II) systems, 1064.
Williams, David R. See also **Corrie**, Anna M., 2561.
Williams, John. See **Dart**, James W., 1747.
Williams, John K. See **Ardrey**, Robert E., 2641, and **Emsley**, John, 1576, 2701.

- Williams, Robert J. P.** See **Byers, William**, 555, **Dobson, Christopher M.**, 2662, and **Hill, H. Allen O.**, 1663.
- Williams, William E., and Lalor, Fergus J.** Synthetic applications of the reaction of silver(I) salts with the bis-[dicarbonyl(π -cyclopentadienyl)iron] complex, 1329.
- Willis, C. M.** See **Jeffreys, J. A. D.**, 749.
- Wilson, Ian L.** See **Dehnicke, Kurt**, 1428.
- Wilson, I. R.** See **Kerr, D. F.**, 459.
- Wilson, Ivan R.** See **Bridgart, Glenn J.**, 1274, 1281, 1582.
- Wilson, J. W.** See **Glocking, F.**, 94.
- Wilson, John W.** The Lewis acidity of trialkoxyboranes: a reinvestigation, 1628.
- Some thermodynamic parameters for substituted ammonium salts of the tetramethoxyborate anion, 1631.
- Winfield, J. M.** See **Majid, A.**, 1876.
- Winterton, Neil.** See **Matts, Terence C.**, 992.
- Wolff, Michael A.** See **Kustin, Kenneth**, 1031.
- Wood, Dennis C.** See **Green, Michael**, 1564.
- Wood, John S.** See **Al-Karaghoul, A. Razzak**, 2318.
- Wood, R. H.** See **Gearhart, R. C.**, 359.
- Woodhams, Frank W. D.** See **Howie, R. Alan**, 1478.
- Woods, Michael.** See **Carroll, Anthony P.**, 2736, and **Das, Rabindranath N.**, 709.
- Woodward, Peter.** See **Howard, Judith**, 1840, **Marsh, Robert A.**, 778, and **Weaver, John**, 1060, 1439.
- Woolf, Alfred A.** See **Crookes, John V.**, 1241.
- Worthington, James M.** See **Bailey, Neil A.**, 1227.

- Wright, Gillian, Glyde, R. W., and Mawby, R. J.** Kinetics and mechanism of the formation and isomerization of some propionyl complexes of iridium(III), 220.
- Wright, Peter E.** See **Hall, David**, 1508.
- Wyk, Jan A. van.** See **de Beer, Jacob A.**, 2341.

X

- Xavier, Antonio V.** See **Dobson, Christopher M.**, 2662.

Y

- Yamagata, Tsuneaki.** See **Otsuka, Sei**, 2491.
- Yerkess, Jack.** See **Ferraris, Giovanni**, 816.

Z

- Zeiss, Harold H.** See **Daly, John J.**, 73, 1497.
- Žmikić, A., Cvrtić, D., Pavlović, D., Murati, I., Reynolds, W., and Ašperger, S.** Interaction between hexacyanoferrate(II) ion and mercury(II) and silver(I) ions, 1284.
- Zocchi, Marcello, Tieghi, Giuseppe, and Albinati, Alberto.** Crystal and molecular structure of di- μ -acetato-bis-[(2-methylallyl-3-norbornyl)palladium(II)], 883.



INDEX OF SUBJECTS, 1973

A

- Absorption** and magnetic c.d. spectra of some d^5 hexahalides, 1605.
- Acetic acid** complexes of vanadium(III) and titanium(III), 209.
- Acetylacetonates**, metal, enthalpies of solution, 2414.
- Acid-base** properties of *N*-methylhistamine [4-(2-methylaminoethyl)imidazole] and *NN*-dimethylhistamine[4-(2-dimethylaminoethyl)imidazole] and their complexing capacity with cobalt(II), nickel(II), copper(II), and zinc(II), 2539.
- properties of spinaceamine and spinacine and their complexing capacity with divalent metals, 323.
- Acid** decomposition of decavanadate: specific salt effects, 2481.
- Actinide** and lanthanide compounds. Low co-ordination numbers in. Part I. The preparation and characterisation of tris[bis(trimethylsilyl)amido]lanthanides, 1021.
- elements, thermodynamics. Part IV. Heats and free energies of formation of the tetrachlorides, tetrabromides, and tetraiodides of thorium, uranium, and neptunium, 428.
- tetrachlorides (Th, Pa, U, and Np) and tetrabromides (Th and Pa), tetragonal, structural parameters and unit cell dimensions, 686.
- trivalent. Part III. Some chemical and physical properties of hydrated uranium(III) fluoride and the anhydrous chloride, bromide, and iodide. The stability of uranium(III) in aqueous solution and in organic solvents, 604.
- Actinoid** tetrahalides, complexes with sulphoxide, 2308.
- tetranitrates, dimethyl sulphoxide complexes, 2326.
- Activation** of molecular tritium and application to the tritium labelling of aliphatic hydrocarbons. Tritium exchange reactions on irradiated silica gel. Part I, 1145.
- Adducts** of co-ordination compounds. Part IX. Halogenocarbon solvates of trihalogenotripyridinerhodium(III), 2002. Part X. Solvates and adducts of dihalogenotetrapyridinerhodium(III) salts, 2009.
- Alkali-metal** complexes. Part VII. Crystal and molecular structures of the *o*-nitrophenolatobis(1,10-phenanthroline) complexes of sodium and rubidium, 2347.
- complexes of phenacyl kojate (5-phenacyloxy-2-hydroxy-methyl-4*H*-pyran-4-one), 138.
- salts, complexes formed with cyclic polyethers, crystal structures. Part VI. Complex formed between dicyclohexyl-18-crown-6, isomer B, (perhydrodibenzo[*b,h*][1,4,7,10,13,16]hexaoxacyclo-octadecan) and sodium bromide, 2215. Part VII. Complex formed between dibenzo-24-crown-8(6,7,9,10,12,13,20,21,23,24,26,27-dodecahydrodibenzo[*b,n*]-1,4,7,10,13,16,19,22-octaoxacyclotetradecan) and two molecules of potassium isothiocyanate, 2469.
- salts, complexes, including those of chelating anions, with four macrocyclic 'crown' ethers, 2062.
- Alkyl** and aryl-fluorophosphines as ligands in transition-metal complexes with metals in positive oxidation states. Part I. Nickel(II) and cobalt(II) halide complexes of di(*t*-butyl)fluorophosphine, 1783.
- and aryl migration from carbon monoxide to platinum promoted by silver ion, 1267.
- Alkylideneamido**-derivatives of metals and metalloids. Part III. The chemistry of alkylideneamino(trimethyl)-stannanes, 151. Part IV. 1,1-Bis(trifluoromethyl)-methyleneamido-complexes of Group IVb metals, 157. Part V. Complexes of the late transition metals with $(CF_3)_2C=N^-$ as ligand, and a tautomeric hydrogen transfer from metal to ligand, 1975.
- Alkyls** of transition metals, trimethylsilylmethyl and neopentyl, elimination stabilised alkyls. Part III, 1120.
- Alkylthio-** and arylthio-cyclotetraphosphazetenes. Phosphorus-nitrogen compounds. Part XXXVI, 2736.
- Alkylzinc** compounds. Part I. Crystal structure of ethylzinc iodide, 64.
- Allyl** complexes of rhodium and iridium, 2039.
- Aluminium(III)** bromide and iodide, standard enthalpies of formation, 659.
- complexes with 2-nitroacetophenone and nitroacetone, 2238.
- Aluminium-27** n.q.r. spectroscopy, in the study of bonding in some organoaluminium compounds, 2381.
- Amide** complexes of uranium tetrahalides and uranyl chloride, 2682.
- Anionic** hexafluoroacetylacetonato complexes of alkali and other metals and the crystal structure of dirubidium tris-(hexafluoroacetylacetonato)sodate, 2188.
- Antimonate(V)**, trifluorotellurium(IV) μ -fluoro-bis[pentafluoro-]. Fluoride crystal structures. Part XXI, 2150.
- Antimony**. $Se_8(Sb_2F_{11})_2$ and $Se_8(AsF_6)_2$, reaction with tetrafluoroethylene, 2314.
- (III). Stoichiometry and kinetics of the reaction between thallium(III) and antimony(III) ions in perchloric acid solution, 789.
- trifluoride, reactions with tris- and tetrakis-dimethylaminochlorotetraphosphonitriles, 2649.
- Tris(*o*-dimethylarsinophenyl)stibine, visible spectra of some five-co-ordinate nickel(II) complexes containing. Trigonal bipyramidal and square pyramidal complexes, 1945.
- Applications** of carbon-13 Fourier n.m.r. to stereochemical problems of transition metal-olefin complexes, 1672.
- Aqueous** acids, hydronium ion in, proton chemical shift and hydration, 49.
- aluminium salt solutions, 1H n.m.r. chemical shifts, 1177.
- solubilities of nitrogen trifluoride and dinitrogen tetrafluoride, 2722.
- solution n.m.r. studies, temperature dependence of 1H chemical shifts, 1446.
- solution, thermodynamic properties of tetra-alkylammonium ions in, 1585.

- Arene-molybdenum chemistry:** arene(π -allyl)molybdenum derivatives containing carboxylate, aminocarboxylate, and related ligands, 1403.
nucleophilic addition to the cations $[C_6H_5Mo(\pi-C_3H_5)L_2]^+$ giving cyclohexadienyl derivatives, 2177.
some π -allyl, dihydride, dinitrogen, and carbonyl derivatives, 301.
some bis- π -allylic derivatives, 1952.
- Aromatic substitution reactions of an arylplatinum(IV) complex,** 2459.
- Arsenic.** Crystal and molecular structure of tetra-arsenic pentasulphide, 1740.
of 2,3,6-triphenylarsenin, 511.
Crystal structure of tetra-arsenic tetraselenide, 1739.
of the β -form of tetra-arsenic trisulphide, 1737.
-nitrogen 'mixed' polydentate ligands, palladium(II) complexes, 175.
radicals, $\cdot As(OH)_4$, also $\cdot P(OH)_3$ and $(MeO)_3\dot{P}O^-$, magnetic properties. Unstable intermediates. Part CXXXVI, 2509.
 $Se_8(AsF_6)_4$ and $Se_8(Sb_2F_{11})_2$, reaction with tetrafluoroethylene, 2314.
- Arylazo and aryldi-imine derivatives.** Complexes of the platinum metals. Part III, 2713.
- L-Ascorbate,** thallium(I), crystal structure, 2209.
- Assignment of inner- and outer-sphere mechanisms to the vanadium(II) reductions of halogenopenta-amminecobalt-(III) complexes,** 2730.

B

- Base hydrolysis of amino-acid esters and amides in the co-ordination sphere of cobalt(III).** Part II. Hydrolysis of 2-aminoethyl acetate, 2503.
of deuteriated *trans*-dichlorobis(ethylenediamine)cobalt-(III) and *trans*-dichloro[(*RS*)-1,9-diamino-3,7-diazanonane]cobalt(III) cations, proton exchange in, 1989.
- Basic strengths of some dinitrogen complexes of molybdenum(0), tungsten(0), rhenium(I), and osmium(II),** 1167.
- Behaviour of diamine-*af*-dibromo-dinitroplatinum(IV) complexes and the adduct *ac*-dinitro-*bd*-bis(pyridine)platinum(II)-boron trifluoride in acidic solutions,** 897.
- Benzynes** complexes of osmium derived from dimethylphenylphosphine or dimethylphenylarsine, 2589.
- Beryllium.** *t*-Butylberyllium-alkyls and -aryls: amine complexes and pyrolysis to hydrides, 618.
diphenyl-: electron impact and calorimetric studies, 94.
-(II), tetrakis(trimethyl phosphato)- complex, proton magnetic resonance study of the exchange of trimethyl phosphate on, 2075.
- (Bicyclo[2.2.1]hepta-2,5-diene)carbonyltri-halogenoruthenate(II) complexes,** 2112.
- Binding energies, rhodium 3d and halogen *np*:** *X*-ray photoelectron spectra of compounds containing rhodium-halogen bonds, and of rhodium(II) acetate and its derivatives, 116.
- Binuclear organometallic compounds.** Part VII. Trimethylstannyl complexes of tantalum(V), molybdenum(IV), and tungsten(IV), 1653.
- Bis- π -allylic derivatives:** arene-molybdenum chemistry, 1952.
- Bismuth.** Four- and five-co-ordinate tetraphenylbismuth-(V) compounds, preparation, characterisation, and vibrational spectra, 1394.
-(V), kinetics of oxidation-reduction reactions with halide ions and other reductants, 461.
- Bismuthine,** triphenyl and tris(*p*-chlorophenyl), conformation in benzene solution, 1101.
- Bis(trifluoromethyl)phosphine** with some organocobalt complexes, 2427.
- Bivalent metal ions,** reaction with sulphate ions: entropy titrations, 1947.
- Bond indices and valencies for the elements from hydrogen to chlorine,** 2273.
and valency, 838.
- σ -Bonded organotransition-metal ions.** Part XIV. Characterisation of monomeric and bridged anionic complexes of organocobaloximes, 1218.
- π -Bonded trifluoroacetonitrile complex of platinum(0),** 1292.
- Bonding in some organoaluminium compounds by ^{27}Al n.q.r. spectroscopy,** 2381.
properties of ligands: a Mössbauer study of carbonyl complexes of iron(III), 2103.
studies from charge-transfer absorption and magnetic circular dichroism spectra. Part II. The complex hexacyanoferrate(III) and pentacyanoferrate(III) complexes of C_{4v} symmetry, 1344.
- Borane.** (Diphenylmethyleneamino)dimesitylborane, crystal and molecular structure, 858.
- Boranes,** calculation of the electronic structure by the self-consistent molecular orbital method. Part II. Highly symmetrical cage anions, 627.
electronic structure by the self-consistent molecular orbital method. Part III. Excited states of cage species, 2277.
Reinvestigation of the Lewis acidity of the trialkoxyboranes, 1628.
Studies on cyclic organotetraborane derivatives, 2633.
- Borate anion,** tetramethoxy-, some thermodynamic parameters for substituted ammonium salts, 1631.
the tetradecahydronona-(1-) ion, $B_9H_{14}^-$, synthesis from pentaborane(9), 179.
- Boron-nitrogen adducts,** n.m.r. spectra, resonance line broadening due to chemical exchange and quadrupole-induced relaxation, 2139.
-phosphorus compounds. Crystal structure of 1,1,3,3,5,5-hexaphenylcyclotriborotriphosphonane, 1295.
-sulphur compounds. Part IV. Synthesis, reactions, and mass spectral studies of some substituted 4-methyl-1,3,2-dithiaborolans, 568. Part VI. Organoboron compounds of cysteamine (2-aminoethanethiol), 1054.
-to-carbon bond strength, from the thermochemistry of *o*- and *p*-tolylidichloroboranes, 2543.
- trihalide adducts of dimethyl sulphide. A nuclear magnetic resonance study of exchange reactions and mixed boron trihalide adducts, 1047.
- trihydride and trihalide adducts of trimethylamine, polarities and directional polarisabilities. Stereospecific solute-solvent interactions, 1132.
- tri-iodide, reactions with nitrogen donors. Some comparisons of boron tri-iodide with other boron halides, 1303.
- t*-Butylberyllium-alkyls and -aryls:** amine complexes and pyrolysis to hydrides, 618.

- Cadmium(II)**, aquodinitratobis(quinoline)-, crystal and molecular structure. Structural investigations of metal-nitrate complexes. Part VII, 2130.
- (II) complexes of semicarbazide, thiosemicarbazide, and selenosemicarbazide, 1751.
- olefin complexes, gas chromatographic studies, 2159.
- pentafluorophenyl-halides, ^{19}F n.m.r. spectra, 978.
- μ -(2,2':6',2''-Terpyridylcadmium)-bis(pentacarbonyl-manganese)(2*Cd-Mn*), 90.
- Caesium**-tin halide and caesium-lead-halide, phases obtained from the frozen molten systems, 1985.
- Calcium** hydrogen phosphate dihydrate, dehydration, 34.
- Calculation** of the electronic structure of boranes by the self-consistent molecular orbital method. Part II. Highly symmetrical cage anions, 627.
- 'weak-field' ligand-field, for tetragonally distorted d^2 and d^8 systems, 287.
- Calorimetric** and electron impact studies on diphenylberyllium, 94.
- Carbene** and isocyanide complexes of gold(I). The stepwise formation of formamidines, 2571.
- and Lewis base complexes of chromium, molybdenum, and tungsten carbonyls, 1743.
- complexes, osmium, 1433.
- complexes. Part I. Electron-rich olefins as a source of carbene complexes of platinum(II) and palladium(II); and some experiments with $(\text{CF}_3)_2\text{CN}_2$, 514. Part II. Thermally-induced isomerisations of *trans*-platinum(II) and palladium(II) complexes and the chemistry of the *cis*- and *trans*-isomers, 906. Part III. Carbon-13 n.m.r. studies of carbene complexes of 1,3-diorganoimidazolidin-2-ylidenes, 1982.
- Carbodi-imides**, reactions with palladium(II) compounds, 1867.
- Carbon**-hydrogen cleavage reactions of some trimethyl- and triethyl-phosphine complexes of osmium, 2727.
- Carbon-13** and hydrogen-1 n.m.r. studies on π -allyl-palladium complexes. Transition metal-carbon bonds. Part XXXIV, 2390.
- Fourier n.m.r., application to stereochemical problems in transition metal-olefin complexes, 1672.
- n.m.r. of some carbonyl complexes of chromium, molybdenum, and tungsten, 2012.
- spectra of tungsten and molybdenum carbonyl derivatives, 1027.
- studies of carbene complexes of 1,3-diorganoimidazolidin-2-ylidenes. Carbene complexes. Part III, 1982.
- Carbonyl** complexes of iron, cobalt, and nickel with tris(trimethylsilylmethyl)phosphine, 867.
- closo-Carboranes**, negative-ion mass spectrometry, 76.
- Carboxylate** complexes, structure and stability of. Part XII. The location of co-ordination sites in copper(II) carboxylates in solution by proton magnetic resonance, 1005.
- Carboxylates** metal. Part III. Pyridine-2,6-dicarboxylates of the lanthanides. Synthesis and spectral studies and the X-ray photoelectron spectra of several pyridine carboxylate complexes, 200. Part IV. Pyridine-2,6-dicarboxylate complexes of cobalt(II), nickel(II), rhodium(II), and rhodium(III). Synthesis, spectral and magnetic properties, and a study of rhodium 3*d* binding energies by X-ray photoelectron spectroscopy, 1035.
- Carboxylato**-triphenylphosphine complexes of ruthenium, cationic triphenylphosphine complexes derived from them, and their behaviour as homogeneous hydrogenation catalysts for alkenes, 846.
- Catalytic** cycloaddition of allene over nickel(0) template systems, reaction paths and mechanisms, 2491.
- Cationic** carbonylnitrosyl complexes of molybdenum and tungsten, 2183.
- Cerium(III)**, bistrisphenyl(ethyl)phosphonium pentanitrate-, crystal and molecular structure, 2318.
- (IV) perchlorate, reaction with hydrogen peroxide, 487.
- Charge-transfer** absorption and magnetic circular dichroism spectra, bonding studies from. Part II. The complex hexacyanoferrate(III) and pentacyanoferrate(III) complexes of C_{4v} symmetry, 1344.
- Chemistry** of the metal carbonyls. Part LXVI. Complexes derived from a carbonyl osmium anion, 972. Part LXVII. Hydroxycarbene complexes of manganese(I), 975.
- of transition-metal vapours. Part III. Formation of complexes with arenes, trifluorophosphine, and nitric oxide, 120.
- Chlorine**, kinetics of oxidation of uranium(IV) ions in aqueous solution, 138.
- trans-Chlorotetrafluoro(trifluoromethyl)sulphur** and its reactions with olefins and acetylenes, 2289.
- Chromium** carbonyl, carbene and Lewis base complexes, 1743.
- carbonyl complexes, carbon-13 n.m.r. spectra, 2012.
- complexes, arene, cycloheptatriene, and cycloheptatrienyl tricarbonyl-, voltammetric oxidation, 1768.
- (III), complexes with 2-nitroacetophenone and nitroacetone, 2238.
- Crystal and molecular structure of bis[(trimethylsilyl)methyl]bis(2,2'-bipyridyl)chromium(III) iodide, 1497.
- (III), *cis*-diphenylbis-(2,2'-bipyridyl)-, iodide, crystal and molecular structure, 73.
- 3-ethyl- and 5-ethyl-1,2-dihydro-1-methylpyridine(tricarbonyl)-, crystal structures, 2285.
- (III), hexa-amine-salts, solid-state photochemical and energy-transfer processes, 368.
- hexacarbonyl-*trans*-6a,12a-dihydro-octalenedichromium-(0), tricarbonyl-1,4-dihydrophenanthrenedichromium(0), and tricarbonylphenanthrenedichromium(0), crystal and molecular structures, 1834.
- hexacarbonyl, solution and single-crystal Raman study, 2264.
- Kinetics of complexing of oxalate to penta-amineaquo-chromium(III), 1232.
- (III) nitrito-complexes, kinetics of the acid hydrolysis, 992.
- oxygen systems, X-ray p.e. spectroscopic study, 1675.
- (0), pentacarbonyl(trimethylphosphine sulphide)-, crystal and molecular structure, 2205.
- Single-crystal i.r. reflectance spectrum of potassium tetraoxochromate(VI), 1426.
- tetra-aquoethylenediamine-, reaction with oxalate, 1758.
- Circular dichroism** of trigonal nickel(II) chelate complexes. Optical rotatory power of co-ordination compounds. Part XVIII, 955.
- of trisbipyridyl and trisphenanthroline complexes. Optical rotatory power of co-ordination compounds. Part XVII, 949.
- of trisbipyridyl complexes, intermediate exciton coupling in. Optical rotatory power of co-ordination compounds. Part XVI, 944.

- Cleavage of α -nitroketones by platinum(II) and platinum(0) and formation of platinum(II) complexes containing fulminato- and carboxylato-groups, 2409.**
- Cobaloximes, organo-, characterisation of monomeric and bridged anionic complexes. σ -Bonded organotransition-metal ions. Part XIV, 1218.**
- Cobalt. μ -Amido- μ -hydroxo- and μ -amido- μ -selenato-bis-[tetra-aminecobalt(III)] complexes, 504.**
- (II) and cobalt(III), the chemistry of their 2-pyridylamine complexes, 2172.
 - (II) and iron(II) complexes, quinone adducts with a quadridentate Schiffs base, 976.
 - (II), bis(pentane-2,4-dionato)dipyridine-, complexes, pyridine exchange studied by ^{14}N n.m.r., 1896.
 - (I), bis(tertiary phosphine)tris(isonitrile)-, complexes, characterisation and voltammetric properties, 1747.
 - (III), *trans*-chloro(L)bis(ethylenediamine)- complexes, replacement of chloride by nucleophiles in methanol. Mechanism of octahedral substitutions in non-aqueous media. Part VIII, 2514.
 - (II). Chloro[dodeca(dimethylamino)cyclohexaphosphazene-NNNN]cobalt(II) di- μ -chloro-bis[dichlorocobaltate(II)-bischloroform, crystal structure, 61.
 - (III), *trans*-chloronitro- and *trans*-dichlorobisethylenediamine- ions, Grunwald-Winstein treatment of spontaneous aquation in mixed aqueous solvents. Mechanism of octahedral substitutions. Part IX, 2518.
 - (III) complexes of 5,12-dimethyl-7,14-diphenyl-1,4,8,11-tetra-azacyclotetradeca-4,11-diene, 1212.
 - (II) complexes of pyridine-2,6-dicarboxylic acid, 1035. of some tripyrrene-*b* and bilene-*b* ligands, 1734. of trimethylthiourea and halogens, 1646.
 - (I) complexes, reactions with ammonium and sulphonium ions and organic halides, 2034.
 - (II) complexes with tetradentate Schiff bases and their reactivity with oxygen. Optically active complexes of Schiff bases. Part II, 754.
- Compounds containing a tin-cobalt bond, with four-coordinate tin; Mössbauer spectra and bonding, 1694.
- (III) compounds of carbanions and their reactivity. Part I. The preparations and structure of some malononitrilato-compounds, 414.
 - (III), co-ordination sphere, base hydrolysis of amino-acid esters and amides present. Part II. Hydrolysis of 2-aminoethyl acetate, 2503.
- crystal and molecular structure of di- μ -dimethylstannylene-bis(carbonyl- π -cyclopentadienylcobalt), 1060.
- (III). Crystal structure of di- μ -hydroxo-*trans*-diaquo-bis[tri-aminecobalt(III)] tetranitrate dihydrate, and a possible mechanism for the formation of the cation, 2669.
- Crystal and molecular structure of potassium *cis*-bis(iminodiacetato)cobaltate(III)-2.5 water, 655.
- (II). Crystal and molecular structure of two five-coordinate complexes with an N_4P donor set, 1383.
 - (II), dichlorobis(*NN'*-diethylthiourea)-, triclinic form, crystal structure, 876.
 - (III), *trans*-dichlorobis(ethylenediamine)- and *trans*-dichloro[(*RS*)-1,9-diamino-3,7-diazanonane]- cations, deuteriated, proton exchange in base hydrolysis, 1989.
- Electronic and magnetic properties of the inactive form of the complex *NN'*-ethylen-bis(salicylideneiminato)-cobalt(II), and of five-co-ordinate complexes of cobalt(II) with Schiff bases, 1712.
- Evidence for tetracarbonylcobalt from frozen-gas matrix i.r. at 20 K, 1321.
- (II) five-co-ordinate complexes containing tridentate ligands with Group Vb donors, 143.
 - (II) five-co-ordinate complexes, X-ray structural evidence for the influence of geometrical distortion on the spin-state, 641.
 - (II) halide complexes of di(*t*-butyl)fluorophosphine, 1783.
 - (III), halogenopenta-ammine- complexes, assignment of inner- and outer-sphere mechanisms to vanadium(II) reductions, 2730.
- μ -Hydroxo-dicobalt(III) complexes, reactions. Part VIII. Kinetic studies of the bridge cleavage of the μ -hydroxo-bis[penta-amminecobalt(III)] complex, 439.
- μ -Hyponitrito-bis[penta-amminecobalt(III)] salt, crystal structure; the nature of the red nitrosylpenta-amminecobalt(III) cation, 607.
- (III) ion, confirmation of the non-existence of polymeric species in aqueous perchloric acid solutions of the hexa-aquocobalt(III) ion, 900.
 - (III) ions, reactions with thiourea and its *N*-substituted derivatives in aqueous perchlorate media. Metal-ion oxidations in solution. Part X, 2321.
- iron binuclear complexes. Part I. Identification of mixed complexes derived from *trans*-[Co(en) $_2$ (H $_2$ O). (SO $_4$) $_2$] $^+$, 2335.
- 57-iron-57 electron-capture reaction in hexacyanocobaltate(III) complexes, after effects, 563.
- Methylnyltricobalt enneacarbonyls, reactions with Grignard and organolithium reagents, 1794.
- (III), mixed ligand compounds of β -diketonates and quadridentate dianion Schiff bases, 1359.
 - (II), nickel(II), and palladium(II), co-ordination properties with methylenebis(diphenylphosphine chalcogenides), 1024.
- octacarbonyldi-, reactions with some ditertiary phosphines and arsines, 2086.
- organo- complexes, reactions with bis(trifluoromethyl)-phosphine, 2427.
- (III), μ -oxalato- complexes, tetranuclear, reduction by the ions chromium(II) and vanadium(II), 736.
 - (II), oxidation by dichloride ions generated by flash photolysis, 1632.
 - (II), paramagnetic hydrido-complexes, 748.
 - (III), polynuclear complexes with bridging carboxylato-ligands, preparation and characterisation, 2548.
 - (II) porphyrins, effect of 1,3,5-trinitrobenzene on the ^1H n.m.r. and e.s.r. spectra, 1663.
- Preparation, aquation, and base hydrolysis of some octahedral *trans*-chlorocyanocobalt(III) amine complexes, 1301.
- reactions of complex compounds of. Part VIII. Synthesis, protonation, and oxidative degradation of salicylatocobalt(III) complexes, 233.
- Reactions of μ -hydroxo-dicobalt(III) complexes. Kinetic studies of the reaction of the μ -amido- μ -hydroxo-bis[tetra-amminecobalt(III)] complex with phosphate ions in aqueous perchloric acid solutions, 829.
- Schiff-base-complexes, steric effects in reversible oxygenation. Part I. Crystal and molecular structure of the optically active and *meso*-forms of *NN'*-butylene-bis(salicylideneiminato)cobalt(II), 419.

Cobalt (contd.)

- Structures and some reactions of π -diene derivatives of octacarbonyldicobalt, 1593.
- (ii) sulphite, anhydrous, oxidation to anhydrous cobalt-(ii) sulphate and pyrosulphate in dimethyl sulphoxide-sulphur dioxide, 534.
- thio-bridged binuclear π -cyclopentadienyl complexes, electrochemical oxidation of, 2268.
- Trigonal prismatic co-ordination of d^7 cobalt(II) in orthorhombic crystalline $[\{FB(ONCHC_6H_5N)_3P\}Co^{II+}][BF_4^-]$, MeCN, 1570.
- X-Ray crystal structure of bis(adeninium) *trans*-bis-(adenine)tetra-aquocobalt(II) bis(sulphate) hexahydrate, 1596.
- (ii) zwitterionic complexes, 328.
- Cobaltate(II)** pentacyano-, catalysis of the hydrogenation of *trans*-1-phenylbuta-1,3-diene, kinetic and deuterium tracer studies of the mechanism, 1813.
- (iii). Potassium (+)tris[L-cysteinesulphinato(2-)-SN]cobaltate(III), a versatile agent for resolution of 3+ species, 933.
- Cobalto(II)undecatungstophosphate** and related anions. Heteropolyanions containing two different heteroatoms. Part III, 341.
- Colour**, isomerism, and structure of some copper co-ordination compounds. Part XXI. Crystal and molecular structure of the 2:1 adduct between 1,3,5-trinitrobenzene and bis(*N*-methylsalicylaldiminato)copper(II), 1819.
- Competitive interactions** in the complexing of ethylene with silver(I) salt solutions, 1241.
- Complex** compounds of cobalt, reactions. Part VIII. Synthesis, protonation, and oxidative degradation of salicylatocobalt(III) complexes, 233.
- formation with a C-alkyl-substituted linear tetra-amine. Free energy, enthalpy, and entropy changes for the reactions of 4,4,9,9-tetramethyl-5,8-diazadodecane-2,11-diamine with copper(II) ions and protons in aqueous solution, 1942.
- with heptane-3,5-dione. Stabilities of some bivalent metal chelate complexes in aqueous dioxan (50%), 1095.
- halides of the transition metals. Part XIV. The X-ray photoelectron spectra of mononuclear and dinuclear complex halides of rhenium(III) and rhenium(IV) and of the $Re(NCS)_6^{2-}$ and $Re_2(NCS)_8^{2-}$ complex anions, 1039.
- Complexes** of alkali-metal salts, including those of chelating anions, with four macrocyclic 'crown' ethers, 2062.
- of bromine with hexamethylphosphoric triamide (HMPA) and with its polymeric analogue poly-HMPA, 474.
- of nickel(II) and copper(II) with some 2,3,4,5-tetrahydro-1*H*-1,5-benzodiazepines, 26.
- of some first-row transition elements with (-)-spartein, 226.
- of the late transition metals with $(CF_3)_2C:N^-$ as ligand, and a tautomeric hydrogen transfer from metal to ligand. Alkylideneamido-derivatives of metals and metalloids. Part V, 1975.
- of the nickel(II) ion with purine bases, relaxation spectra with theophylline, 1031.
- of the platinum metals. Part II. Carboxylato(triphenylphosphine) derivatives of ruthenium, osmium, rhodium, and iridium, 1912.

Complexing capacity, with divalent metals, of spinaceamine and spinacine, 323.

constants for ferric thiocyanates, solvent extraction, 1088.

properties of α -nitroketones. Part II. Complexes of 2-nitroacetophenone and nitroacetone with chromium-(III), iron(III), and aluminium(III), 2238. Part III. A stereochemical investigation of some new copper(II) α -nitroketonate complexes and their base adducts with O- and N-donors, 2242.

Confirmation of the non-existence of polymeric species in aqueous perchloric acid solutions of the hexa-aquocobalt(III) ion, 900.

Conformation of triphenylbismuthine and tris(*p*-chlorophenyl)bismuthine in benzene solution, 1101.

Conformational influences in copper co-ordination compounds. Part V. Crystal and molecular structure of {1,2-bis[(2-aminobenzylidene)amino]propanato(2-)}copper(II), 1508. Part VI. Crystal structure of a fourth crystalline isomer of bis-(2-hydroxy-*N*-methyl-1-naphthylmethyleneiminato)copper(II), 2440.

Contact and pseudo-contact contributions to shifts induced by lanthanide(III) ions in n.m.r. spectra, separation of, 2662.

Co-ordinated keto-carboxylates, some reactions of the carbonyl group, 1699.

ligands, reactions of. Part III. Mechanism of the rearrangement of platinum chlorofluoro-olefin complexes, 2099.

Co-ordination chemistry of manganese. Part II. Some pentachloromanganates(III), 455.

complexes containing multidentate ligands. Part II. Five-co-ordinate nickel(II) and cobalt(II) complexes containing tridentate ligands with Group VB donors, 143. Part III. The visible spectra of some five-co-ordinate nickel(II) complexes containing tris(*o*-dimethylarsinophenyl)stibine. Trigonal bipyramidal and square pyramidal complexes, 1945.

of niobium and tantalum. Part XIV. Alkoxo(2,2'-bipyridine)trichloroniobium(IV) complexes, 550.

compounds of indium. Part XVIII. Anionic thiocyanato-complexes of indium(III), 960. Part XXI. Some compounds derived from indium(III) acetate, including indium diacetate, 243. Part XXII. Anionic complexes derived from the lower halides of indium, 922.

properties of methylenebis(diphenylphosphine chalcogenides) with cobalt(II), nickel(II), and palladium(II), 1024.

Copper(I) and iron(II) complexes with some substituted 1,2-dithiole-3-thiones, 1209.

Bis[di- μ -(phenylmethoxy)-bis(pentane-2,4-dionato)dicopper(II)], crystal structure, 1102.

-(II), bis(*N*-n-hexyl-7-methylsalicylaldiminato)-, crystal and molecular structure, 1908.

-(II) bis(*N*-methylsalicylaldiminato)-, 2:1 adduct with 1,3,5-trinitrobenzene, crystal and molecular structure, 1819.

-(II), bis(pyrrolidonecarbodithioato)-, crystal structure, 1332.

-(I), carbonyl(hydrotripyrzolo-1-ylborato)- complex, preparation and reactions, 2433.

-(II) carboxylates in solution, proton magnetic resonance location of co-ordination sites. Structure and stability of carboxylate complexes. Part XII, 1005.

Copper (contd.)

- (i) carboxylates: preparations and infrared and mass spectral features, 2463.
- catalysis in the oxidation of cysteine and related thiols. Metal-ion catalysis in some reactions of hexacyanoferrate(III) ions. Part I, 1274.
- (ii) chelates of cyclobutane-1,1-dicarboxylic acid and their mixed ligand chelates, an e.s.r. study, 2498.
- (iii). Chlorobis(2,2'-bipyridyl)copper(II) chloride hexahydrate, crystal and molecular structure, 2293.
- (i) complex of 2,5-dithiahexane-1,6-dicarboxylic acid, crystal structure, 1.
- (ii) complexes of bis(nitrato)bis(α -picoline) and bis(nitrato)mono(pyrazine), e.s.r. and single-crystal electronic spectra, 1044.
- (iii) complexes with some 2,3,4,5-tetrahydro-1H-1,5-benzodiazepines, 26.
- co-ordination compounds, conformational influences. Part VI. Crystal structure of a fourth crystalline isomer of bis-(2-hydroxy-N-methyl-1-naphthylmethyleneiminato)copper(II), 2440.
- (iii). Crystal and molecular structure of aquobis(NN-dimethylglycinato)copper(II) dihydrate, 2626.
- of a solvate of chloro[1,6-bis(2'-pyridyl)-2,5-diaza-hexane]copper(II) chloride, 1227.
- of {1,2-bis[(2-aminobenzylidene)amino]propanato(2-)}copper(II), 1508.
- of bis(aminomethanesulphonato)copper(II), 1590.
- of diiodobis(2,2'-bipyridylamine)copper(II)iodide perchlorate, 580.
- of μ -oxalato-bis[di(2-aminoethyl)aminecopper(II)] diperchlorate, 1537.
- of tris(1,10-phenanthroline)copper(II) perchlorate, 1237.
- Crystal structure of tris(trimethylammonium *catena*-tri- μ -chloro-cuprate(1-)) tetrachlorocuprate(2-), 595.
- determination of traces by activation of water-insoluble apopolyphenol oxidase, 495.
- (ii) dibromodiadeninium- dibromide, crystal structure, 424.
- (ii) dimers, of low symmetry, theoretical and experimental e.s.r. study, 1549.
- (ii) ions, thermodynamics of complex formation with 1,5,8,12-tetra-azadodecane in aqueous solution, 793.
- (ii) α -nitroketonate complexes and their base adducts with O- and N-donors, a stereochemical investigation, 2242.
- N.m.r. spectra of dimeric cupric compounds, 555.
- (ii) polyamine thiocyanate complexes, crystal structures. Part I. Bis(ethylenediamine)copper(II) thiocyanate perchlorate, 251.
- (ii). Refined crystal structure of tetra- μ -acetato-bis-aquodicopper(II), 2575.
- (ii) salicylideneiminato-complexes, ^1H n.m.r. study of the formation of molecular complexes with 1,3,5-trinitrobenzene, 1805.
- (ii) Schiff base complexes, e.s.r. study of the dimeric forms, 1259.
- Single-crystal polarized electronic and e.s.r. spectra of dichlorobis(triphenylphosphine oxide)copper(II), 1644.
- (ii) sodium carbonate trihydrate (chalconatronite), crystal structures, 2338.
- (ii), tetra-amine compounds, the relative energies of the $^3B_{2g}$ and 2E_g states. Symmetry-restricted covalence in ligand field theory. Part I, 1853.
- (ii) 4,4,9,9-tetramethyl-5,8-diazadodecane-2,11-diamine complex formation, free energy, enthalpy, and entropy changes, 1942.
- Covalent compounds of quadrivalent transition metals.** Part VI. Spectroscopic studies on titanium, vanadium, and zirconium diethyldithiocarbamates, 2228.
- 'Crown' ethers, macrocyclic, in complexes of alkali-metal salts, 2062.
- Crystal and molecular structure of acetylacetonato-C-meso-(5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclo-tetradecane)nickel(II) perchlorate, 1408.**
- of a dideuterio(pyrazol-1-yl)gallane dimer, 2252.
- of ammonium uranyl trioxalate, ammonium uranyl dioxalate, and ammonium diuranyl trioxalate, 1610, 1614, 1616.
- and magnetic properties of *catena*- μ -acetato-[NN'-ethylenebis(salicylaldiminato)]manganese(III). A linear-chain complex containing a single *anti-anti* acetate bridge, 2523.
- of μ -oxo-bis[bis-(2-methyl-8-hydroxyquinolinato)]iron(III), chloroform, 2016.
- of aquobis(NN-dimethylglycinato)copper(II) dihydrate. Structure and stability of carboxylate complexes. Part XIII, 2626.
- of aquodinitratobis(quinoline)cadmium(II). Structural investigations of metal-nitrate complexes. Part VII, 2130.
- of a solvate of chloro[1,6-bis(2'-pyridyl)-2,5-diaza-hexane]copper(II) chloride, 1227.
- of 1-benzylphosphine by X-ray analysis, 1888.
- of 2,2'-bipyridyldichloro(trimethyl)tantalum(V), 1830.
- of {1,2-bis[(2-aminobenzylidene)amino]propanato(2-)}copper(II), 1508.
- of bis(aminomethanesulphonato)copper(II), 1590.
- of bis(dithioformato)bis(triphenylphosphine)ruthenium(II), 2646.
- of bis(N-n-hexyl-7-methylsalicylaldiminato)copper(II), 1908.
- of bis(π -2-methylallyl)bis(trimethylphosphite)ruthenium. An example of asymmetric π -bonding between methylallyl ligands and ruthenium, 778.
- of μ -[1,2-bis(phenylthio)ethane]-bis(chlorogold(I)), 52.
- of bis[(trimethylsilyl)methyl]bis(2,2'-bipyridyl)chromium(III) iodide, 1497.
- of bistrisphenyl(ethyl)phosphonium pentanitratocerium(III), 2318.
- of carbonylchloro(4-fluorophenyl-di-imide-2C,N')bis(triphenylphosphine)iridium(III) tetrafluoroborate acetone solvate, 434.
- of chlorobis(2,2'-bipyridyl)copper(II) chloride hexahydrate, 2293.
- of di- μ -acetato-bis[(2-methylallyl-3-norbornyl)palladium(II)], 883.
- of *trans*-dibromobis[di(t-butyl)fluorophosphine]nickel(II), 926.
- of dicaesium μ -(ethylenediaminetetra-acetato)-di- μ -sulphido-bis[oxomolybdate(V)] dihydrate, 1173.
- of dicarbonylchlorobis-[o-phenylene(dimethylarsino)]-molybdenum(II) tri-iodide-bischloroform, 2664.
- of dicarbonyl- π -cyclopentadienyl[tetrakis(pyrazol-1-yl)-borato]molybdenum, 1893.
- of di- μ -carbonyl-*cis*- μ -(1-5- η :1'-5'- η -dicyclopentadienyldimethylsilane)bis(carbonyliron)(Fe-Fe), 1439.
- of dicarbonyl{hydrotris(pyrazol-1-yl)borato-N(2),N(2'),-N(2'')- π -(2-methylallyl)molybdenum, 2444.

Crystal and molecular structure (contd.)

- of dichloro[bis(diphenylphosphino)ethylamine]palladium(II), 1443.
- of di- μ -chloro-tetrakis(4-methylpenta-1,3-diene)dirhodium(I), 1484.
- of di- μ -dimethylstannylene-bis(carbonyl- π -cyclopentadienylcobalt), a metal ring compound, 1060.
- of 3,7-dihydro-1,1,3,3,5,5,7,7-octamethyl-1*H*,5*H*-benzo[1,2-*c*:4,5-*c'*]bis[1,2,5]oxadisilole, 2474.
- of di[iodobis(2,2'-bipyridylamine)copper(II)] iodide perchlorate, 580.
- of *cis*-diphenylbis-(2,2'-bipyridyl)chromium(III) iodide, 73.
- of (diphenylmethyleneamino)dimesitylborane, 858.
- of dithiocyanatobis(triphenylphosphine)mercury(II), 2447.
- of [NN'-ethylenebis(salicylideneiminato)](methanol)dioxouranium, 2331.
- of *cis*-fluoro(1,1,1,3,3,3-hexafluoroisopropyl)bis(triphenylphosphine)platinum, a square planar metal fluoro-complex, 1840.
- of heptacarbonyl- μ_3 -diphenylacetylene- μ -(1,2,3,4-tetraphenylbutadiene-1,4-diyl)-triangular-triosmium, 1933.
- of hexacarbonyl-*trans*-6a,12a-dihydro-octalenedichromium(0), tricarbonyl-1,4-dihydrophenanthrenechromium(0), and tricarbonylphenanthrenechromium(0). Reactions of [14]Annulene and dehydro[14]annulene with organotricarbonylchromium complexes, 1834.
- of hexakis[tris-(*p*-tolyl)phosphine]-octahedro-hexagold bis-(tetraphenylborate): an octahedral gold cluster, 2423.
- of a μ -hyponitrito-bis[penta-amminecobalt(III)] salt: the nature of the red nitrosylpenta-amminecobalt(III) cation, 607.
- of octacarbonyl- μ -[1,2-bis(dimethylarsino)-3,4,5,4-tetrafluorocyclobutene]dimanganese (Mn-Mn), 111.
- of [octakisdimethylaminocyclotetraphosphazene]tetracarbonyltungsten, 2708.
- of optically active and *meso*-forms of NN'-butylidenebis(salicylideneiminato)cobalt(II), 419.
- of μ -oxalato-di[bisethylenediaminenickel(II)] dinitrate, μ -oxalato-bis[di(2-aminoethyl)aminecopper(II)] diperchlorate, and μ -oxalato-bis[di(3-aminopropyl)aminezinc(II)] diperchlorate, 1537.
- of pentacarbonyl(trimethylphosphine sulphide)chromium(0), 2205.
- of potassium *cis*-bis(iminodiacetato)cobaltate(III)-2.5 water, 655.
- of sodium di- μ -sulphido-bis[(L-cysteinato)oxomolybdate(V)] dihydrate, 732.
- of tetra-arsenic pentasulphide, 1740.
- of tetrachloro-di- μ_3 -oxo-tetra- μ -propoxo-tetraoxodipropoxotetramolybdenum (2Mo-Mo), 1376.
- of 1,3,5,7-tetrakis(dimethylamino)-1,3,5,7-tetrafluorotetraphosphonitrile. Cyclic inorganic compounds. Part XIV, 396.
- of tetra(methylgermanium) hexasulphide, 543.
- of the 1:1 adduct between diphenyl sulphoxide and mercury(II) chloride, 159.
- of the 2:1 adduct between 1,3,5-trinitrobenzene and bis-(N-methylsalicylaldiminato)copper(II), 1819.
- of the *o*-nitrophenolatobis(1,10-phenanthroline) complexes of sodium and rubidium. Alkali-metal complexes. Part VII, 2347.
- of tricarbonyl- π -[1,1,1-tricarbonyl-2-methyl-3-diphenylmethylene-6-methoxyferra-2-oxacyclohexenyl]iron-(Fe-Fe), a product from the reaction between diphenyldiazomethane and tricarbonyl- π -[1,1,1-tricarbonyl-2,5-dimethoxyferracyclopentadiene]iron, 749.
- of trichloro(triphenylphosphine)gold(III), 886.
- of trichlorotris(diethylphenylphosphine)rhodium(III), 1789.
- of 2,3,6-triphenylarsenin, 511.
- of 2,3,4,6-triphenyl-2,4,6-trithio-1,3,5,2,4,6-trioxatriphosphorinan, 2032.
- of tris(1,10-phenanthroline)copper(II) perchlorate, 1237.
- Crystal lattice effects on the electronic spectrum of the manganate ion, 2595.
- Crystal structure and i.r. spectra of *trans*-dithiocyanatobis-[(3,3-dimethylbutynyl)diphenylphosphine]palladium(II), 488.
- of acetato(dimethyl)indium(III), 248.
- of a fourth crystalline isomer of bis-(2-hydroxy-N-methyl-1-naphthylmethyleneiminato)copper(II). Conformational influences in copper co-ordination compounds. Part VI, 2440.
- of a new form (β) of tetrakis(thiourea)mercury(II) chloride, 2696.
- of a new mercury(II) complex dichloromercury-2/3thiourea, 2698.
- of anhydrous nitrates and their complexes. Part VI. Dimethyldinitratotin(IV), 173.
- of anhydrous potassium carbonate, 70.
- of bis[(3-chloropyridine)mercury(II)] diperchlorate, 893.
- of bis(NN-diethyldithiocarbamate)mercury(II), 284.
- of *cis*-bis(dimethyl(phenyl)phosphine)bis(5-methyltetrazolato)palladium(II). Tetrazoles and tetrazole complexes. Part I, 371.
- of bis[di- μ -(phenylmethoxy)-bis(pentane-2,4-dionato)dicopper(II)], 1102.
- of bis[hydroxo(triphenyl)arsonium(V)] dodeca- μ -chloro-hexachloro-octahedro-hexaniobate(2-), 1858.
- of bis(pyrrolidonecarbodithioato)-nickel(II) and -copper(II), 1332.
- of bromo[tris(2-vinylphenyl)phosphine]rhodium(I), 2202.
- of *fac*-chloro-[1,3-bis(dimethylarsino)propane]tricarbonylmanganese, 673.
- of chlorobis(thiourea)mercury(II) chloride, 334.
- of chlorodifluoro-oxosulphur(VI) hexafluoroarsenate(V), $\text{OSClF}_2^+ \text{AsF}_6^-$, 2533.
- of chloro[dodeca(dimethylamino)cyclohexaphosphazene-NNNN]cobalt(II) di- μ -chloro-bis[dichlorocobaltate(II)]-bischloroform, 61.
- of *trans*-chlorohydridobis(triethylphosphine)palladium, 354.
- of 4-chloropyridinium hexachlorostannate(IV), 359.
- of complexes between alkali-metal salts and cyclic polyethers. Part VI. Complex formed between dicyclohexyl-18-crown-6, isomer B, (perhydrodibenzo[*b,h*][1,4,7,10,13,16]hexaoxacyclo-octadecin), and sodium bromide, 2215. Part VII. Complex formed between dibenzo-24-crown-8(6,7,9,10,12,13,20,21,23,24,26,27-dodecahydrodibenzo[*b,n*]-1,4,7,10,13,16,19,22-octaaxacyclotetracosin) and two molecules of potassium isothiocyanate, 2469.
- of compounds with (N-P)_n rings. Part XI. 1,2,3,4-Tetraphenyl-2,4-dithiocyclodiphosphazane, [PhNP(S)Ph]₄, 106.
- of copper(II) sodium carbonate trihydrate (chalconatronite), 2338.

Crystal structure (contd.)

- of dibromodiadeniniumcopper(II) dibromide: a complex with unidentate adenine, 424.
 - of dicaesium octa- μ_3 -chloro-hexachloro-octahydro-hexa-tungstate(II) and -molybdate(II) complexes, 646.
 - of dicarbonyl(π -cyclopentadienyl)[di(t-butyl)methylene-amino]molybdenum(II), 2629.
 - of di- μ -chloro-bis[η -dicyclopentadienylscandium(III)], 2487.
 - of dichlorobis(NN'-diethylthiourea)cobalt(II) (triclinic form), 876.
 - of dihydrogen ethylenediaminetetra-acetatostannate(II). Stereochemistry of flexible-chelate-metal complexes. Part III, 741.
 - of di- μ -hydroxo-*trans*-diaquo-bis[tri-aminocobalt(III)] tetranitrate dihydrate, and a possible mechanism for the formation of the cation, 2669.
 - of the dimeric pyridine 1-oxide complex with mercury(I) perchlorate, 392.
 - of di- μ -tropolonato-bis[aquo(tropolonato)nickel(II)], 697.
 - of 3-ethyl- and 5-ethyl-1,2-dihydro-1-methylpyridine(tri-carbonyl)chromium, 2285.
 - of ethylzinc iodide. Alkylzinc compounds. Part I, 64.
 - of hexakis(triphenylphosphine oxide)dimercury(I) bis-perchlorate, 1658.
 - of hexakis(pyridine 1-oxide)mercury(II) bisperchlorate, 670.
 - of 1,1,3,3,5,5-hexaphenylcyclotriborataphosphoniane, 1295.
 - of magnesium sulphate heptahydrate (epsomite) by neutron diffraction, refinement, 816.
 - of 2-methyl-5-(tetrafluorophosphoranyl)pyrrole, 2301.
 - of $\text{Na}_2\text{BaSi}_2\text{O}_8$, 2397.
 - of μ -oxalato-bis[(di-n-propyl sulphoxide)nitratodiphenyl-tin(IV)], 2557.
 - preparation, and properties of bis(ethyl carbamate)-dinitratodioxouranium(VI), 451.
 - spectroscopic and magnetic properties of di- μ -methoxo-bis[salicylaldehyde anthraniloylhydrazonato(2-)]-dimanganese(III)-bismethanol, 1141.
 - of μ -(2,2':6',2''-terpyridylcadmium)-bis(pentacarbonyl-manganese)(2Cd-Mn), 90.
 - of tetra- μ -acetato-bisaquodicopper(II), refined, 2575.
 - of tetra-arsenic tetraselenide, 1739.
 - of tetramethylammonium hexachlorodigallate(II), 1843.
 - of thallium(I) L-ascorbate, 2209.
 - of the 1:1 adduct formed between bis(*cis*-1,2-diphenyl-ethylene-1,2-dithiolato)palladium and cyclohexa-1,3-diene, 821.
 - of the copper(I) complex of 2,5-dithiahexane-1,6-dicarboxylic acid, 1.
 - of the β -form of tetra-arsenic trisulphide, 1737.
 - of thiocyanate polyaminecopper(II) complexes. Part I. Bis(ethylenediamine)copper(II) thiocyanate perchlorate, 251.
 - of trifluoro-oxosulphur(VI) hexafluoroarsenate(V), $\text{OSF}_5^+\text{AsF}_6^-$, 2535.
 - of tris(NN'-diethyldithiocarbamate)oxo-niobium(V) and -vanadium(V), 2082.
 - of trimethylammonium *catena*-tri- μ -chloro-cuprate-(1-) tetrachlorocuprate(2-), 595.
- Crystallographic characterisation and synthesis of the carbidopentadecacarbonylhexarhodate dianion in its bis(benzyltrimethylammonium) salt, the first example of a trigonal prismatic cluster of metal atoms, 651.**

studies of the boron-nitrogen bond in aminoboranes. Part IV. Crystal and molecular structure of (diphenylmethyleneamino)dimesitylborane, 858.

Cyanate ions in alkali-metal halide crystals and in aqueous glasses, e.s.r. studies of radiation effects, 3.

Cyanides. Solutions of hydrogen cyanide, silver(I) cyanide, and hexacyanoferric(II) acid; and formation of the di-fluoromethylammonium cation. Hydrogen fluoride solvent system. Part VI, 1261.

Cyanogen chloride, hydrolysis, 912.

reaction of, with sulphite ion, 917.

Cyclic inorganic compounds. Part XIV. Crystal and molecular structure of 1,*cis*-3,*trans*-5,*trans*-7-tetrakis-(dimethylamino)-1,3,5,7-tetrafluorotetraphospho-nitrile, 396.

polyethers, complexes formed with alkali-metal salts, crystal structures. Part VI. Complex formed between dicyclohexyl-18-crown-6, isomer B, (per-hydrodibenzo[*b,h*][1,4,7,10,13,16]hexaoxacyclo-octadecin), and sodium bromide, 2215.

crystal structures of complexes formed with alkali-metal salts. Part VII. Complex formed between dibenzo-24-crown-8(6,7,9,10,12,13,20,21,23,24,26,27-dodecahydrodibenzo[*b,n*]-1,4,7,10,13,16,19,22-octa-oxacyclotetracosin) and two molecules of potassium isothiocyanate, 2469.

Cyclophosph(III)azones, formation of, and their oxo- and thioxo-derivatives, 1414.

Cyclopropyl and other alkyl groups in metal-stabilised carbocations, rearrangement to give cyano- and isocyano-complexes: reactions of Group VI metal isocyano-complexes with nucleophiles, 2119.

Cyclotriphosphazenes, dimethylamino-substituted, X-ray p.e. spectra, 1042.

Cysteamine (2-aminoethanethiol), organoboron compounds of, boron-sulphur compounds. Part VI, 1054.

D

Decavanadate, acid decomposition: specific salt effects, 2481. kinetic study of the acid decomposition, 2479.

Dehydration of calcium hydrogen phosphate dihydrate, 34.

Dehydrofluorination of tetrafluorosilane-amine adducts with anionic hydrides and related compounds. Silicon-nitrogen compounds. Part X, 2675.

Derivatives of divalent germanium, tin, and lead. Part I. The protolysis of cyclopentadienyltin(II) compounds by hydroxy-derivatives. Tin(II) oximes and hydroxylamines, 940.

Determination of traces of copper by activation of water-insoluble apopolyphenol oxidase, 495.

Dialkylaurate(I), reactions with electrophiles: synthesis of trialkylgold(III) compounds, 2620.

Diazaphosphetidinones with four-co-ordinate phosphones, 813.

Diborane, thermal decomposition. Part I. The decomposition mechanism at low conversion and temperature and the inhibiting effect of accumulated hydrogen, 2090.

Dicarb-nido-hexaborate(1-) ion, $\text{C}_2\text{B}_4\text{H}_7^-$, and some dipolar derivatives, chemical and structural studies, 2115.

Dicarbonyltetrahalogenoplatinate(I) salts, 2355.

Dichlorotetrakis (dimethyl sulphoxide)ruthenium(II) and its use as a source material for some new ruthenium(II) complexes, 204.

- Diethylamido-** and pentafluorophenoxo-tungsten(VI) fluorides, 1876.
- Dimethyl(1-naphthyl)phosphine**, some reactions with ruthenium and osmium compounds, 2078.
- sulphoxide complexes of some actinoid tetranitrates, 2326.
- zinc**, reaction with tantalum(V) chloride and some coordination compounds of methyltantalum(V) chloride, dimethyltantalum(V) chloride, and methylniobium(V) chloride, 961.
- Dinitrogen** complexes of molybdenum(0), tungsten(0), rhenium(I), and osmium(II), basic strengths, 1167.
- rhenium(I) and rhenium(II), 612.
- tetrafluoride and nitrogen trifluoride, aqueous solubilities, 2722.
- Dioxygen** complexes of the series $\text{IrX}(\text{CO})(\text{PPh}_3)_2$, 1370.
- difluoride, solution Raman spectrum and normal coordinate analysis, 1928.
- Diphenylberyllium**: electron impact and calorimetric studies, 94.
- Dissymmetric tertiary-alkyl tin(IV)** compounds, 1421.
- Ditertiary phosphines** and arsines, reactions with octacarbonyldicobalt, 2086.
- Dithiocarboxylato-nickel(II)** complexes, electronic spectral studies, 2404.
- Double resonance**, heteronuclear magnetic, in study of tellurium shielding in a representative series of compounds, 2416.
- studies, nuclear magnetic, of organotin selenides, 2134.

E

- Effect** of the ionic medium on the hydrolysis of metal ions: an empirical relation, 229.
- of 1,3,5-trinitrobenzene on ^1H n.m.r. and e.s.r. spectra of some cobalt(II) porphyrins, 1663.
- Electrochemical** oxidation of organometallic complexes. Carbene and Lewis base complexes of chromium, molybdenum, and tungsten carbonyls, 1743.
- thio-bridged binuclear π -cyclopentadienyl complexes of molybdenum, iron, cobalt, and nickel, 2268.
- Electrolyte** solutions, water shifts in, contribution of proton chemical shifts of water in cationic hydration complexes, 42.
- Electron impact** and calorimetric studies on diphenylberyllium, 94.
- studies on triphenyl derivatives of the Group IIIb metals, 1424.
- E.s.c.a.** studies of some transition-metal carbonyl complexes containing organonitrogen ligands, 2143.
- square-planar platinum complexes; correlations with n.q.r. studies, 169.
- Electron spin resonance** and ^1H n.m.r. spectra of cobalt(II) porphyrins, effect of 1,3,5-trinitrobenzene, 1663.
- and polarized electronic, single-crystal, spectra of dichlorobis(triphenylphosphine oxide)copper(II), 1644.
- spectra and single-crystal electronic spectra of the two forms of bis(nitrate)bis(α -picoline)copper(II) and of bis(nitrate)mono(pyrazine)copper(II), 1044.
- studies on tris(bis(trimethylsilylamido) derivatives of titanium, chromium, and iron, 191.
- study of a range of radicals in irradiated phenylphosphonic dichloride and phenylphosphonothionic dichloride. Unstable intermediates. Part CXXXI, 1494.
- of γ -irradiated hexacyanoruthenate(II) ions in various host lattices, 965.
- studies of γ -irradiated potassium hexacyanoferrate(II) in various host lattices, 12.
- of radiation effects upon cyanate and thiocyanate ions in alkali-metal halide crystals and in aqueous glasses. Unstable intermediates. Part CXIX, 3.
- spectra of radicals in γ -irradiated sulphuryl chloride: the SO_2Cl_2^- radical. Unstable intermediates. Part CXXIII, 9.
- the bis(π -cyclopentadienyl)vanadium(IV) and bis(π -cyclopentadienyl)niobium(IV) complexes ($\pi\text{-C}_5\text{H}_5$) $_2\text{-VX}_2$ and ($\pi\text{-C}_5\text{H}_5$) $_2\text{NbX}_2$, 722.
- study of the copper(II) chelates of cyclobutane-1,1-dicarboxylic acid and their mixed ligand chelates, 2498.
- of the dimeric form of some copper(II) Schiff base complexes, 1259.
- theoretical and experimental, of some low-symmetry copper(II) dimers, 1649.
- Electronic** and magnetic properties of the inactive form of the complex NN' -ethylenebis(salicylideneiminato)-cobalt(II), and of five-co-ordinate complexes of cobalt(II) with Schiff bases, 1712.
- spectra and magnetism of tris(bis(trimethylsilylamido) derivatives of scandium, titanium, vanadium, chromium, and iron, 185.
- of some 2,2'-bipyridyl palladium(II) and platinum(II) complexes, solvent effects, 132.
- Single-crystal spectrum of transitions to ^3G states of nickel(II) in distorted tetrahedral environments, 1920.
- spectral studies of dithio- and perthio-carboxylato-nickel(II) complexes, 2404.
- spectrum of the manganate ion, crystal lattice effects, 2595.
- structure of boranes by the self-consistent molecular orbital method. Part III. Excited states of cage species, 2277.
- Electrophilic** addition to hexafluorobut-2-yne complexes of platinum(0), rhodium(I), and iridium(I), 636.
- Elimination** stabilised alkyls. Part II. Neopentyl and related alkyls of chromium(IV), 770. Part III. Trimethylsilylmethyl and neopentyl alkyls of transition metals, 1120.
- Energy-transfer** and solid-state photochemical processes in some hexa-amminechromium(III) salts, 368.
- Enthalpies** of formation of rhenium pentachloride and hexafluoride, 501.
- standard, of aluminium(III) bromide and iodide, 659.
- of solvation of some metal acetylacetonates, 2414.
- Enthalpy** and entropy contributions to the stability of metal complexes of 4,7-diazadecane-1,10-diamine, 1763.
- changes for the interaction of the sulphate ion with some transition-metal ions in aqueous solution, a reinvestigation, 798.
- Entropy** titrations: a reassessment of data for the reaction of the sulphate ion with protons and with bivalent metal ions, 1947.
- Equilibria** and kinetics of complex formation in aqueous acid solution. Reactions between iron(III) and catechol (*o*-dihydroxybenzene). Part I, 2605.
- of the redox reaction in aqueous acid solution. Reactions between iron(III) and catechol (*o*-dihydroxybenzene). Part II, 2609.

- Europium(III) complexes**, study of Mössbauer effect, 546.
 -151 Mössbauer spectroscopic studies of after-effects of the electron-capture decay of gadolinium-151 and the β -decay of samarium-151, 2364.
 of europic oxide, 969.
- Evidence** for a rate-determining chelate-ring-closure mechanism during the formation of the (2,2'-bipyridine)nickel(II) ion in dimethyl sulphoxide solution, 1602.
- Exchange** reaction between rhenium hexafluoride and boron trichloride and enthalpies of formation of rhenium pentachloride and rhenium hexafluoride, 501.
- Excited** states of cage species. Calculation of the electronic structure of boranes by the self-consistent molecular orbital method. Part III, 2277.
- Extraction** of metal cations from aqueous solution with poly-(4- and 5-acrylamidosalicylic acids), 1129.
 of sulphuric acid by methyl diphenyl phosphate and tributyl phosphate, 1198.
 of uranyl nitrate and chloride with trioctylphosphine oxide, thermodynamics, 1649.

F

- Fate** of recoil- ^{59}Fe in an iron double complex specifically enriched with ^{59}Fe , 1086.
- Flash** photolysis, oxidation of iron(II) by dibromide and dichloride ions generated by, 804.
- Fluoride** and acetate solutions in glacial acetic acid, proton magnetic resonance studies. The shielding and thermodynamics of strong hydrogen bonds, 2154.
 crystal structures. Part XXI. Trifluorotellurium(IV) μ -fluoro-bis[pentafluoroantimonate(V)], 2150.
- Fluorine** compounds of nickel(III), 1995.
 -19 n.m.r. spectra of trifluoromethylthio-complexes of platinum, palladium, nickel, and iridium, 1528.
 resonance spectra of pentafluorophenyl-zinc and -cadmium halides, 978.
 -silicon compounds, trifluoroiodosilane and difluorodiodosilane, properties and use in preparing compounds with Si-N, Si-O, and Si-S bonds, 981.
 thermochemistry. Part II. The hexafluoroiodate series, 2237.
- Fluorocarbon** complexes of transition metals. Part II. Tertiary arsine complexes of rhodium(III) derived from hexafluorobut-2-yne and 3,3,3-trifluoropropyne, 2578.
 -Group V derivatives, vibrational spectra. Part III. The compounds $(\text{CF}_3)_2\text{PX}$ where X = halogen or hydrogen, 2754.
- Fluorocarbons**, reactions with low-valent metal complexes. Part XXIV. Chloronitrosylbis(triphenyl-, methylphenyl-, and dimethylphenyl-phosphine)ruthenium and nitrosyltris(triphenylphosphine)iridium, 375. Part XXV. Phosphine, phosphite, and cyclo-octa-1,5-diene platinum complexes, 381. Part XXVI. 1,1,1-Tris(diphenylphosphinomethyl)- and 1,1,1-tris(diphenylarsinomethyl)-ethane, 388.
- Fluoro-1,3,2,4-diazadiphosphetidines**, chemical and spectroscopic studies, 2687.
- Fluorophosphine** complexes of rhodium(I). Part III. Ligand-exchange studies in some dimethylaminodifluorophosphinerhodium(I) complexes, 195.
- Fluorophosphoranes**, reaction with aminosilanes and N-alkyl (or aryl)hexamethyldisilazanes, 2687.
- Fluorosilanes**, photoelectron spectra, 2401.

- Formation** and reactions of cyanocyclohexadienyl complexes of manganese(I), 622.
 constants for lead(II)-amino-acid complexes and their use in computing the complexing competition between lead(II) and *in vivo* essential metal ions, and in computer evaluation of ligands currently employed as lead(II) chelating therapeutics. Thermodynamic considerations in co-ordination. Part XIV, 2561.
 of complexes containing Group V donor atoms and metal-carbon σ -bonds. Reactivity of co-ordinated ligands. Part XV, 404.
 of cyclophosph(III)azanes and their oxo- and thioxo-derivatives, 1414.
 of metal-carbonyl derivatives of monothiocarbamates, dithiocarbamates, ureas, and thioureas from organotin intermediates, 98.
- Four-** and five-co-ordinate complexes containing tertiary phosphines, and some oxidative addition reactions. Isocyanide complexes of rhodium and iridium. Part II, 2046.
 nickel(II) complexes with *cis*-(2-diphenylarsinovinyl)-diphenylphosphine and 9,10-bis(diphenylphosphino)-phenanthrene, 147.
 nitrosyl complexes of iridium(I), 1014.
 -co-ordinate cationic dicarbonyl(phosphine)iridium(I) complexes obtained from chlorotricarbonyliridium, 1625.

G

- Gadolinium-151**, electron capture decay of, studies of after-effects by europium-151 Mössbauer spectroscopy, 2364.
- Gallane**, dideuterio(pyrazol-1-yl)- dimer, crystal and molecular structure, 2252.
- Gallium**. Crystal structure of tetramethylammonium hexachlorodigallate(II), 1843.
 Pseudohalide complexes of trialkylgallium(III), 1428.
 Vibrational spectra and metal-metal bonding in the hexahalogenodigallate(II) ions, $\text{Ga}_2\text{X}_6^{2-}$ (X = Cl, Br, and I), 988.
- Gas** chromatographic studies of cadmium-olefin complexes, 2159.
- Geometric** isomers of the dichloro(3,6-diazaoctane-1,8-diamine)rhodium(III) cation, preparation and properties, 1462.
- Germanes** and silanes, reactions with iridium complexes. Part I. Reactions with Vaska's compound, 1287.
 transition-metal derivatives. Part IV. Germypenta-carbonylrhenium, 214.
- Germanium**. Crystal and molecular structures of tetra-(methylgermanium) hexasulphide, 543.
 Reactions of organodigermanes, 1357.
- Germyl** transition-metal carbonyls and related species, photoelectron spectra, 22.
- Germylcyclopentadiene** and related derivatives of germane, stereochemical non-rigidity, 2374.
- Glutamate**, formation constants for the -proton, -manganese(II), -iron(II), -cobalt(II), -nickel(II), -copper(II), and -zinc(II) systems, 1064.
- Gold(I)**, μ -[1,2-bis(phenylthio)ethane]-bis[chloro-] crystal and molecular structure, 52.
 Ground-state *trans*-effect and molecular structure of trichloro(triphenylphosphine)gold(III), 886.

Gold (cont'd.)

- hexakis[tris-(*p*-tolyl)phosphine]-octahedro-hexagold bis-(tetraphenylborate), crystal and molecular structure: an octahedral gold cluster, 2423.
- (I), isocyanide and carbene complexes, 2571.
- Preparation, properties, and vibrational spectra of complexes containing the AuCl_2^- , AuBr_2^- , and AuI_2^- ions, 1845.
- (III). Reactions of dialkylaurate(I) with electrophiles: synthesis of trialkylgold(III) compounds, 2620.
- Ground-state *trans*-effect and molecular structure of trichloro(triphenylphosphine)gold(III), 886.
- Group Ib** metal chemistry. Part I. Preparation and reactions of the carbonyl(hydrotripyrzolo-1-ylborato)copper(I) complex, 2433.
- Group IIb** metals, electron impact studies on triphenyl derivatives, 1424.
- Group IV**, methylseleno-derivatives, 1716.
- B metals, 1,1-bis(trifluoromethyl)methyleneamido-complexes. Alkylideneamido-derivatives of metals and metalloids. Part IV, 157.
- Group Vb** chalcogenide cyclo-octa-1,5-diene rhodium(I) and iridium(I) complexes, synthesis and reactivity, 2167.
- Group VI** metal carbonyl complexes, tertiary phosphine and arsine chalcogenide derivatives, 2360.
- isocyano-complexes, reactions with nucleophiles: rearrangement of metal-stabilised carbocations containing cyclopropyl and other alkyl groups to give cyano- and isocyano-complexes, 2119.
- monodentate bisphosphine carbonyl complexes, preparation and some reactions. Mechanistic aspects of chelate-ring formation, 347.
- tricarbonyl(tropylium) cations, kinetics of the reaction with acetonitrile, 1683.
- Group VIII** metal complexes with bis(trifluoromethyl)-diazomethane, 1620.
- trifluoromethylthio-complexes, ^{19}F n.m.r. spectra, 1528.
- Grunwald-Winstein treatment of spontaneous aquation of *trans*-chloronitro- and *trans*-dichlorobisethylenediaminecobalt(III) ions in mixed aqueous solvents. Mechanism of octahedral substitutions. Part IX, 2518.

H

- Hafnium(IV)** kinetically stable alkyls, 445.
- Halogen** exchange and vinyl rearrangement, Lewis acid-promoted, of platinum-fluoro-olefin complexes, 2069.
- Halogenocarbon** solvates of trihalogenotripyridinerhodium(III). Adducts of co-ordination compounds. Part IX, 2002.
- Heptane-3,5-dione**, stabilities of some bivalent metal chelate complexes in aqueous dioxan (50%), 1095.
- Heteropolyanions** containing two different heteroatoms. Part III. Cobalto(II)undecatungstophosphate and related anions, 341.
- Hexamethylphosphoric triamide (HMPA)** and poly-HMPA complexes with bromine, 474.
- Histamines**, substituted, complexes with transition metal ions, and acid-base properties, 2539.
- Homogeneous** catalysts, mechanism of hydrogen-deuterium exchange in propene, application of microwave spectroscopy, 584.
- catalytic and stoichiometric hydrogenation of ethylene by tris(hydridocarbonyl)bis(triphenylphosphine)-iridium(III), 632.

- hydrogenation catalysts for alkenes, carboxylato-triphenylphosphine complexes of ruthenium, 846.
- of olefins catalysed by chlorocarbonylbis(triphenylphosphine)iridium(I) with and without basic co-catalysts, mechanism, 701.
- Hydride** complexes of six-co-ordinate platinum, 854.
- Hydrido**-complexes of osmium(II) and osmium(IV), 997.
- Hydrogen** bonds, strong, shielding and thermodynamics of. Proton magnetic resonance studies of fluoride and acetate solutions in glacial acetic acid, 2154.
- chloride, liquid, solvent system. Part XV. Reactions of the tetrakis[carbonyl(π -cyclopentadienyl)iron(I)] complex, 1879.
- fluoride solvent system. Part V. Solutions of SeF_4 and SeF_6 , 67. Part VI. Solutions of hydrogen cyanide, silver(I) cyanide, and hexacyanoferric(II) acid: formation of the difluoromethylammonium cation, 1261.
- 1 and carbon-13 n.m.r. studies on π -allylic-palladium complexes. Transition metal-carbon bonds. Part XXXIV, 2390.
- 1 n.m.r. spectra of *cis*-dimethylbis(trimethylphosphine)-platinum and some related systems, 2450.
- Hydrogenation** by cyanocobaltate. Part III. Kinetic and deuterium tracer studies of the mechanism of the hydrogenation of *trans*-1-phenylbuta-1,3-diene catalysed by pentacyanocobaltate(II), 1813.
- Hydrolysis** kinetics of interaction of DL-2,3-diaminopropionic acid and its methyl ester with metal ions, 56.
- of 2-aminoethyl acetate. Base hydrolysis of amino-acid esters and amides in the co-ordination sphere of cobalt(III). Part II, 2503.
- of cyanogen chloride, 912.
- of metal ions, effect of ionic medium, an empirical relation, 229.
- of the oxovanadium(IV) ion and the stability of its complexes with the 1,2-dihydroxybenzenato(2-) ion, 1156.
- Hydronium** ion in aqueous acids, proton chemical shift and hydration, 49.
- μ -**Hydroxo**-dicobalt(III) complexes, reactions. Part IX. Equilibrium and kinetic studies of the reaction of the μ -amido- μ -hydroxo-bis[tetra-amminecobalt(III)] complex with selenate ions in aqueous perchloric acid solutions, and characterisation of the μ -amido- μ -selenato-bis[tetra-amminecobalt(III)] complex, 504.
- Hydroxycarbene** complexes of manganese(I). Chemistry of the metal carbonyls. Part LXVII, 975.
- Hydroxylamine**, oxidation. Metal-ion catalysis, 1582.

I

- Indium**-(III) acetato(dimethyl)-, crystal structure, 248.
- anionic complexes derived from the lower halides of, 922.
- (III), anionic thiocyanato-complexes. Co-ordination compounds of indium. Part XVIII, 96.
- co-ordination compounds. Part XXI. Some compounds derived from indium(III) acetate, including indium diacetate, 243.
- Infinitely** adaptive structures, 1107.
- Infrared** and Raman spectra of single crystals of Magnus' green salt, tetra-ammineplatinum(II) tetrachloroplatinate(II), 1450.
- spectra and photochemistry of the complex pentacarbonyliron in solid matrices at 4 and 20 K, evidence for formation of the complex tetracarbonyliron, 1351.

Infrared (contd.)

spectral evidence for the formation of the new complexes dicarbonyldinitrosylsmium and tetracarbonylcobalt in frozen gas matrices at 20 K, 1321.

study (high-pressure) of the reactions of phosphine-substituted derivatives of tetrairidium dodecacarbonyl with carbon monoxide and hydrogen, 362.

Inhibiting effect of accumulated hydrogen on the thermal decomposition of diborane, 2090.

Insertion reactions of platinum hydrido-complexes with olefins: hydrolysis of platinum-carbon σ -bonds, 1848.

Interaction between hexacyanoferrate(II) ion and mercury-(II) and silver(I) ions, 1284.

of DL-2,3-diaminopropionic acid and its methyl ester with metal ions. Part II. Hydrolysis kinetics, 56.

of hydridocarbonyltris(triphenylphosphine) complexes of iridium(I) and rhodium(I) with organic acids, 929.

of the sulphate ion with some transition-metal ions in aqueous solution, enthalpy changes, a reinvestigation, 798.

of a vitamin B₁₂ model complex with amino-acids and oligopeptides. A visible and n.m.r. spectroscopic study, 317.

Intermediate exciton coupling in the circular dichroism of trisbipyridyl complexes. Optical rotatory power of coordination compounds. Part XVI, 944.

Internal metallation of *t*-butyldi-*o*-tolylarsine and di-*t*-butyl-*o*-tolylarsine by platinum, 2394.

of secondary and tertiary carbon atoms by platinum(II) and palladium(II), 270.

Iodine and bromine, kinetics of oxidation of uranium(IV) ions in aqueous solution, 1340.

oxide trifluoride and iodyl fluoride. Thermochemistry of fluorine compounds. Part III, 2725.

Ionic medium, effect of on the hydrolysis of metal ions, an empirical relation, 229.

Iridium-(III) carbonylchloro(4-fluorophenyl)di-imide-2C,N'-bis(triphenylphosphine)- tetrafluoroborate acetone solvate, crystal structure, 434.

carboxylato(triphenylphosphine) derivatives, 1921.

-(I) cation, $[\text{Ir}(\text{CO})(\text{CH}_3\text{CN})(\text{PPh}_3)_2]^+$ and its substitution reactions, 1365.

-(I) chlorocarbonylbis(triphenylphosphine)-, catalysis of homogeneous hydrogenation of olefins with and without basic cocatalysts, mechanism, 701.

-(III), complexes containing three or four trimethylphosphine ligands, n.m.r. spectra, 2220.

complexes, pulse radiolysis, 1799.

Four-co-ordinate cationic dicarbonyl(phosphine)iridium-(I) complexes obtained from chlorotricarbonyliridium, 1625.

-(I), Group VB chalcogenide cyclo-octa-1,5-diene complexes, synthesis and reactivity, 2167.

-(I) hexafluorobut-2-yne complex, electrophilic additions, 636.

-(I), interaction of hydridocarbonyltris(triphenylphosphine) complexes of, with organic acids, 929.

isocyanide complexes (and rhodium). Part I. Tetrakis isocyanide species, their oxidative addition reactions, and some allyl complexes, 2039. Part II. Four- and five-co-ordinate complexes containing tertiary phosphines, and some oxidative addition reactions, 2046.

Members of the series $\text{IrX}(\text{CO})(\text{PPh}_3)_2$ with various anionic ligands and their dioxygen complexes, 1370.

-(I) nitrosyl complexes, four- and five-co-ordinate, 1014.

nitrosyltris(triphenylphosphine)-, reactions with fluorocarbons, 375.

pentamethylcyclopentadienyl mono-, di-, and tri- μ -hydrido-complexes, 1901.

-(III) propionyl complexes, kinetics and mechanism of formation and isomerisation, 220.

Reaction of silanes and germanes with Vaska's compound, 1287.

-(I). Reactions of pentafluorophenylsilver(I) with some transition-metal halogeno-complexes; oxidative-addition reactions of the complex carbonyl(pentafluorophenyl)bis(triphenylphosphine)iridium(I), 2653.

Solid state reactions in the carbonylchlorobis(triphenylphosphine)iridium(I)-hydrogen chloride system, 1802.

tetra-, dodecacarbonyl, phosphine-substituted derivatives, a high-pressure infrared spectral study of their reactions with carbon monoxide and hydrogen, 362.

trimethylphosphine complexes, octahedral, vibrational spectra, 1489.

triphenylphosphine complexes, Mössbauer and X-ray p.e. spectroscopic study, 1828.

-(III) tris(hydridocarbonyl)bis(triphenylphosphine)-, homogeneous catalytic stoichiometric hydrogenation of ethylene, 632.

Iron-(III) and catechol (*o*-dihydroxybenzene), reactions between. Part I. Equilibria and kinetics of complex formation in aqueous acid solution, 2605. Part II. Equilibria and kinetics of the redox reaction in aqueous acid solution, 2609.

-(II) and cobalt(II) complexes, quinone adducts, with a quadridentate Schiff's base, 765.

-(II) and copper(I) complexes with some substituted 1,2-dithiole-3-thiones, 1209.

-(II) and iron(III) Schiff base complexes, Mössbauer and magnetic investigations, 676.

Arylazo derivatives of substituted iron carbonyls, 1754.

-(II), bromocarbonyl(π -cyclopentadienyl)-, phosphorus-(III) complexes, photochemistry, 1899.

bromotetrafluorophenyl(cyclopentadienyl)dicarbonyl derivatives, syntheses and reactions, 553.

-(III), carbonyl complexes, Mössbauer study: bonding properties of ligands, 2103.

-(III), chlorobis(quinolin-8-olato)- complex, iron-59 tracer study of its formation by reaction between iron(III) chloride and quinolin-8-ol, 115.

-cobalt binuclear complexes. Part I. Identification of mixed complexes derived from $\text{trans}[\text{Co}(\text{en})_2(\text{H}_2\text{O})-(\text{SO}_3)]^+$, 2335.

-57-cobalt-57 electron-capture reaction in hexacyanocobaltate(III) complexes, after effects, 563.

-(III), complexes with 2-nitroacetophenone and nitroacetone, 2238.

Crystal and molecular structure of di- μ -carbonyl-*cis*- μ -(1-5- η :1'-5'- η -dicyclopentadienyldimethylsilane)-bis(carbonyliron)(*Fe-Fe*), 1439.

η -cyclopentadienyl bridging sulphido- and phosphino-derivatives, oxidation studies, 2341.

-(0), dicarbonylbis[(2-vinylphenyl)diphenylphosphine]-: structure of a stable iron(0) mono-olefin chelate complex with 2-vinylphenyldiphenylphosphine, 2454.

dinitrosyl complexes with thio-ligands, 2521.

double complex specifically enriched with ^{59}Fe , the fate of recoil- ^{59}Fe , 1086.

E.s.r. studies of γ -irradiated potassium hexacyanoferrate(II) in various host lattices, 12.

Iron (contd.)

- ferric thiocyanates, solvent extraction of, 1088.
- Hexacyanoferrate(III) and pentacyanoferrate(III) complexes, bonding studies from charge-transfer absorption and m.c.d. spectra, 1344.
- Interaction between hexacyanoferrate(II) ion and mercury(II) and silver(I) ions, 1284.
- Kinetics and mechanism of replacement of nitrosobenzene in the pentacyano(nitrosobenzene)ferrate(II) ion by cyanide ion, 602.
- of aquation of the complex $\text{tris}[3-(2\text{-pyridyl})-5,6\text{-bis}(4\text{-phenylsulphonato})-1,2,4\text{-triazine}]\text{iron(II)}$ and its reactions with hydroxide, cyanide, and peroxodisulphate ions, 1340.
- Mass spectrometric studies on derivatives of cyclo-octa-tetraenetricarbonyliron, 1686.
- Metal-ion catalysis in some reactions of hexacyanoferrate(III). Part III. The oxidation of hydroxylamine, 1582.
- Metal perfluoro-alkyl- and -aryl-thiolates. Part II, 1957.
- organometallic complexes, the LFe(CO)_4 and $\text{L}_2\text{Fe(CO)}_3$ series, ligand-variation studies on the Mössbauer effect, 718.
- Oxidation of iron(II) by dibromide and dichloride ions generated by flash photolysis. Kinetics of oxidation of transition-metal ions by halogen radical anions. Part I, 804.
- (III), $\mu\text{-oxo-bis}[\text{bis}(2\text{-methyl-8-hydroxyquinolinato})\text{-}]\text{-chloroform}$, magnetic properties and crystal and molecular structure, 2016.
- Pentacarbonyl- and tetracarbonyl-iron in solid matrices, i.r. spectra and photochemistry, 1351.
- (0), pentacarbonyl-, reaction with thiocyanogen, 1891.
- Photochemistry of ferrocenyl ketones and acids in dimethyl sulphoxide and related solvents, 1468.
- Reaction of tricarbonylcycloheptatrieneiron and tricarbonyl(methyl-, bromo-, and phenyl-cyclo-octa-tetraene) iron with hexafluoroacetone, dicyanobis(trifluoromethyl)ethylene, and tetracyanoethylene, 1564.
- of a terminal phosphido-group in an organo-iron complex. Part I. Some oxygen, sulphur, and selenium derivatives, 1124.
- of the tetrakis[carbonyl($\pi\text{-cyclopentadienyl}$)iron(I)] complex in liquid hydrogen chloride, 1879.
- some cyclopentadienyl complexes containing a chelating diphosphine ligand, preparation and Mössbauer spectra, 1873.
- Synthetic applications of the reaction of silver(I) salts with the bis[dicarbonyl($\pi\text{-cyclopentadienyl}$)iron] complex, 1329.
- thio-bridged binuclear $\pi\text{-cyclopentadienyl}$ complexes, electrochemical oxidation of, 2268.
- 59 tracer study of the reaction between iron(III) chloride and quinolin-8-ol to give the chlorobis(quinolin-8-olato)iron(III) complex, 115.
- tricarbonyl(polyene aldehyde)- complexes, 1997.
- Tricarbonyl- $\pi\text{-[1,1,1-tricarbonyl-2-methyl-3-diphenyl-methylene-6-methoxyferrate-2-oxacyclohexenyl]iron-(Fe-Fe)}$, crystal and molecular structure, 749.
- (III) trinuclear carboxylate complexes, magnetic, electronic, and Mössbauer spectral properties, 573.
- (II), $\text{tris}(1,10\text{-phenanthroline})$ complex, kinetics of aquation in aqueous dioxan, 1335.

X-Ray structure determination of a new metal cluster complex: $\text{di-}\mu_3\text{-arsino-tris(tricarbonyliron)}(3\text{Fe-Fe})$, 307.

$\gamma\text{-Irradiated}$ hexacyanoruthenate(II) ions in various host lattices, e.s.r. studies, 965.

Isocyanide and carbene complexes of gold(I). The stepwise formation of formamidines, 2571.

complexes of rhodium and iridium. Part I. Tetrakis-isocyanide species, their oxidative addition reactions, and some allyl complexes, 2039. Part II. Four- and five-coordinate complexes containing tertiary phosphines, and some oxidative addition reactions, 2046.

Isocyano-complexes and new synthesis of chloro($\pi\text{-cyclopentadienyl}$)titanium(III), 1954.

formation by rearrangement of metal-stabilised carbocations containing cyclopropyl and other alkyl groups: reactions of Group VI metal isocyano-complexes with nucleophiles, 2119.

Isolation and characterisation of aquo- and phenyl-(diethylenetriamine)platinum(II) complexes, 1070.

2,4- and 2,3-isomers of the dicarba-*nido*-hexaborate(1-) ion, $\text{C}_2\text{B}_4\text{H}_7^-$, and some dipolar derivatives, chemical and structural studies, 2115.

Isonitrile complexes of osmium and their reactions to give hydride, amine, and carbene complexes, 1433.

Isothermal dehydration of uranyl(VI) nitrate hexahydrate above room temperature, some observations, 1115.

K

Kinetic and deuterium tracer studies of the mechanism of the hydrogenation of *trans*-1-phenylbuta-1,3-diene catalysed by pentacyanocobaltate(II), 1813.

studies of the bridge cleavage of the $\mu\text{-hydroxo-bis}[\text{penta-amminecobalt(III)}]\text{ complex}$, 439.

on the vanadium(II)-titanium(IV) and titanium(III)-vanadium(IV) redox reactions in aqueous solutions, 537.

study of the acid decomposition of decavanadate, 2479.

Kinetics and mechanism of replacement of nitrosobenzene in the pentacyano(nitrosobenzene)ferrate(II) ion by cyanide ion, 602.

of the formation and isomerisation of some propionyl complexes of iridium(III), 220.

of the oxidation of thiosulphate ions by copper(II) ions in aqueous ammonia solution, 889.

of aquation of chloro- and thiocyanato-chromium(III) complexes in mixed aqueous solvents, 825.

of the complex $\text{tris}[3-(2\text{-pyridyl})-5,6\text{-bis}(4\text{-phenylsulphonato})-1,2,4\text{-triazine}]\text{iron(II)}$ and its reactions with hydroxide, cyanide, and peroxodisulphate ions, 1340.

of the hexabromorhenate(IV) and hexachlororhenate(IV) ions, 902.

of $\text{tris}(1,10\text{-phenanthroline})\text{iron(II)}$ complexes in aqueous dioxan, 1335.

of bidentate ligand exchange between chelate complexes of nickel(II), 662.

of complexing of oxalate to penta-ammineaquo-chromium(III), 1232.

of oxidation of transition-metal ions by halogen radical anions. Part I. The oxidation of iron(II) by dibromide and dichloride ions generated by flash

Kinetics (contd.)

- photolysis, 804. Part II. The oxidation of cobalt(II) by dichloride ions generated by flash photolysis, 1632.
- of oxidation-reduction reactions between elements of Groups V and VII. Part I. Bismuth(V) with halide ions and other reductants, 461.
- of the acid hydrolysis of nitrito-complexes. Part III. Nitritochromium(III) complexes, 992.
- of the oxidation of uranium(IV) ions by halogens in aqueous solution. Part I. Iodine and bromine, 134. Part II. Chlorine, 138.
- of the reaction between titanium(III) and vanadium(V), 2552.
- of acetonitrile with tricarbonyl(tropylium) cations of metals in Group VI, 1683.

L

- Lanthanide and actinide compounds.** Low co-ordination numbers in. Part I. The preparation and characterisation of tris[bis(trimethylsilyl)amido]lanthanides, 1021.
- (III) ions, separation of contact and pseudo-contact contributions to shifts induced in n.m.r. spectra, 2662.
- Lanthanides.** Lewis acidity of organolanthanides. The interaction of cyclopentadienyl-lanthanides with some carbonyl and nitrosyl complexes, 1501.
- pyridine-2,6-dicarboxylates, synthesis and spectral studies and the X-ray p.e. spectra of several pyridine carboxylate complexes, 200.
- Lead(II)-amino-acid complexes,** formation constants, 2661.
- caesium-halide and tin-caesium-halide, phases obtained from the frozen molten systems, 1985.
- (II) complexes of semicarbazide, thiosemicarbazide, and selenosemicarbazide, 1751.
- Hexachloro-plumbate, -stannate, and -tellurate, n.q.r. investigation of comparative differences between, resulting from cationic effect, 357.
- salts, irradiated, formation of Pb^{3+} centres, and their e.s.r. parameters. Unstable intermediates. Part CXXXV, 2233.
- Lewis acid-promoted vinyl rearrangement and halogen exchange of platinum-fluoro-olefin complexes,** 2069.
- acidity of organolanthanides. The interaction of cyclopentadienyl-lanthanides with some carbonyl and nitrosyl complexes, 1501.
- of trialkoxyboranes, a reinvestigation, 1628.
- Ligand-exchange studies in some dimethylaminodifluorophosphinerhodium(I) complexes,** 195.
- Liquid hydrogen chloride solvent system.** Part XV. Reactions of the tetrakis[carbonyl(π -cyclopentadienyl)-iron(II)] complex, 1879.
- sodium. Reactions with oxides of vanadium. Reactions of liquid sodium with transition-metal oxides. Part VI, 1520.
- Low co-ordination numbers in lanthanide and actinide compounds.** Part I. The preparation and characterisation of tris[bis(trimethylsilyl)amido]lanthanides, 1021.
- valent metal complexes, reactions with fluorocarbons. Part XXIV. Chloronitrosylbis(triphenyl-, methyl-diphenyl-, and dimethylphenyl-phosphine)ruthenium and

nitrosyltris(triphenylphosphine)iridium, 375. Part XXV. Phosphine, phosphite, cyclo-octa-1,5-diene platinum complexes, 381. Part XXVI. 1,1,1-Tris-(diphenylphosphinomethyl)- and 1,1,1-tris(diphenylarsinomethyl)-ethane, 388.

M

- Magnesium sulphate heptahydrate (epsomite),** refinement of crystal structure of neutron diffraction, 816.
- Magnetic and electronic properties of the inactive form of the complex NN' -ethylenebis(salicylideneiminato)-cobalt(II), and of five-co-ordinate complexes of cobalt(II) with Schiff bases,** 1712.
- and Mössbauer investigations on some iron(II) and iron(III) Schiff base systems, 676.
- anisotropy and structure of hexa(urea)titanium salts, 238.
- circular dichroism and absorption spectra of some d^8 hexahalides, 1605.
- spectra and charge-transfer absorption, bonding studies from. Part II. The complex hexacyanoferrate(III) and pentacyanoferrate(III) complexes of C_{4v} symmetry, 1344.
- double resonance studies of silylaminodifluorophosphine and some related amines, 1215.
- of some *trans*-bis(triethylphosphine) complexes of platinum, 2370.
- electronic, and Mössbauer spectral properties of several trinuclear iron(III) carboxylate complexes, 573.
- properties and crystal and molecular structure of μ -oxo-bis[bis-(2-methyl-8-hydroxyquinolinato)iron(III)],-chloroform, 2016.
- properties of some *N*-(2-hydroxyphenyl)-2-hydroxy-1-naphthylmethyleniminato-complexes of the oxovanadium(IV) ion, 1703.
- titrations by an n.m.r. method, 2587.
- Magnetism and electronic spectra of tris(bis(trimethylsilyl)amido) derivatives of scandium, titanium, vanadium, chromium, and iron,** 185.
- Malononitrilato-compounds of cobalt(III),** preparations and structure, 414.
- Manganate ion,** crystal lattice effects on the electronic spectrum, 2595.
- Manganese-(III), catena- μ -acetato-[NN' -ethylenebis(salicylaldiminato)]-,** crystal and molecular structure and magnetic properties. A linear-chain complex containing a single *anti-anti* acetate bridge, 2523.
- fac*-chloro[1,3-bis(dimethylarsino)propane]tricarbonyl-, crystal structure, 673.
- (II), complexes with ligands 1,10-phenanthroline, 2,2'-bipyridine, and 2,2',2''-terpyridine, rates of formation and dissociation in anhydrous methanol, 399.
- co-ordination chemistry. Part II. Some pentachloromanganates(III), 455.
- (I) cyanocyclohexadienyl complexes, formation and reactions, 622.
- (I), hydroxycarbene complex, 975.
- Metal perfluoro-alkyl- and -aryl-thiolates. Part II, 1957.
- octacarbonyl- μ -[1,2-bis(dimethylarsino)-3,3,4,4-tetrafluorocyclobutene]di- (*Mn-Mn*), crystal and molecular structure, 111.
- (II), oxidation by dichloride and dibromide ions generated by flash photolysis, 1637.

Manganese (contd.)

- Reaction of a series of substituted manganese carbonyl bromide compounds with nitrosonium hexafluorophosphate. Reactions of metal carbonyls. Part V, 2658.
- Spectroscopic and magnetic properties and crystal structure of di- μ -methoxy-bis[salicylaldehyde anthraniloylhydrazonato(2-)]dimanganese(III)-bismethanol, 1141.
- Steric and stereochemical limitations of higher substitution of manganese carbonyl bromide, 841.
- μ -(2,2':6',2''-Terpyridylcadmium)-bis(pentacarbonylmanganese)(2*Cd-Mn*), 90.
- Thermal decomposition of potassium permanganate, 1701.
- Trimethyl(pentacarbonylmanganese)-silane, -germane, and -stannane: vibrational spectra and electron impact studies, 1269.
- Mass** spectral features of copper(I) carboxylates, 2463.
- studies of some substituted 4-methyl-1,3,2-dithiabboranes, 568.
- spectrometric investigations of 40 phosphetan 1-oxide compounds. Differentiation of *cis*- and *trans*-ring methyl groups by aromatic shielding, 2641.
- spectrometry, negative-ion, of *closo*-carboranes, 76.
- of transition-metal π -complexes. Part I. Studies on derivatives of cyclo-octatetraenetricarbonyliron, 1686.
- Matrix** i.r. study of tetracarbonylcobalt and dicarbonyldinitrosylium at 20 K, 1321.
- isolated metal carbonyls, spectroscopic studies. Part II. Infrared spectra and structures of $\text{Pd}(\text{CO})_4$, $\text{Pd}(\text{CO})_2$, $\text{Pd}(\text{CO})$, and PdCO , 1079.
- Mechanism**, decomposition, at low conversion and temperature and the inhibiting effect of accumulated hydrogen. Thermal decomposition of diborane. Part I, 2090.
- of octahedral substitution in non-aqueous media. Part VIII. Replacement of chloride by nucleophiles in *trans*-chloro(L)bis(ethylenediamine)cobalt(III) complexes in methanol, 2514. Part IX. Grunwald-Winstein treatment of spontaneous aqutation of *trans*-chloronitro- and *trans*-dichlorobisethylenediaminecobalt(III) ions in mixed aqueous solvents, 2518.
- of organometallic reactions. Part I. Kinetics of the reaction of acetonitrile with tricarbonyl(tropylium) cations of metals in Group VI, 1683.
- Mercuric** halide adducts of tertiary phosphine or tertiary arsine complexes of palladium(II) and platinum(II), 783.
- Mercury**-(II) bis(*NN*-diethyldithiocarbamate)-, crystal structure, 284.
- bis(dimethyl phosphonato)-, crystal structure; *trans*-influence in mercury(II) complexes, 560.
- (II) chloride, 1:1 adduct with diphenyl sulphoxide, crystal and molecular structure, 159.
- (II), crystal structure of a new complex dichloromercury-2/3thiourea, 2698.
- of a new form (β) of tetrakis(thiourea)mercury(II) chloride, 2696.
- of bis[(3-chloropyridine)mercury(I)] diperchlorate, 893.
- of chlorobis(thiourea)mercury(II) chloride, 334.
- of hexakis(triphenylphosphine oxide) dimercury(I) bisperchlorate, 1658.
- (II), dithiocyanatobis(triphenylphosphine)-, crystal and molecular structure, 2447.
- (II) hexakis(pyridine 1-oxide)- bisperchlorate crystal structure, 670.
- (I) perchlorate, dimeric pyridine 1-oxide complex with, crystal structure, 392.
- trimethylsilylmethyl derivatives, 2029.

Metal carbonyl derivatives of mono- and dithio-carbamates, ureas, and thioureas, formation from organotin intermediates, 98.

- reactions of. Part XV. Oxidation studies of some η -cyclopentadienyl bridging sulphido- and phosphinoderivatives of iron, 2341.
- carbonyls, reactions. Part V. Reaction of a series of substituted manganese carbonyl bromide compounds with nitrosonium hexafluorophosphate, 2658.
- complexes involving the heavier donor atoms. Part V. Stability and heats of formation of silver(I), cadmium(II), and lead(II) complexes of semicarbazide, thiosemicarbazide, and selenosemicarbazide, 1751.
- of sulphur ligands. Part III. Reaction of platinum(II) *NN*-dialkyldithiocarbamates, *O*-ethyl dithiocarbonate (xanthate), and *OO'*-diethyl dithiophosphate with tertiary phosphines, 254.
- of sulphur ligands. Part IV. Reaction of bis(dialkylphosphinodithioato)-platinum(II) and -palladium(II) with ligands containing Group Vb atoms, 2124.
- halide-phosphorus halide-alkyl halide complexes. Part II. Reactions with niobium and tantalum pentachlorides and tungsten hexachloride, 522.
- ion catalysis in some reactions of hexacyanoferrate(III) ions. Part I. Copper catalysis in the oxidation of cysteine and related thiols, 1274. Part II. The oxidation of cysteine and related thiols in the presence of ethylenediaminetetra-acetic acid, 1281.
- catalysis in some reactions of hexacyanoferrate(III). Part III. The oxidation of hydroxylamine, 1582.
- complexes of 5,12-dimethyl-7,14-diphenyl-1,4,8,11-tetra-azacyclotetradeca-4,11-diene. Part I. Some nickel(II) and copper(II) compounds, 1160. Part II. Some compounds of cobalt(III), 1212.
- complexes with ligands formed by reaction of amines with aliphatic carbonyl compounds. Part II. Some nickel(II) and copper(II) compounds formed by the 1,2-diaminopropane-acetone reaction, 863. Part III. Some compounds formed by reaction of 1,3-diaminopropane nickel(II) compounds with acetone, 1076.
- oxidations in solution. Part IX. Characterisation of the intermediate formed in the oxidation of thiomalic acid by iron(III) ions, 1533. Part X. A reinvestigation of the reactions of thiourea and its *N*-substituted derivatives with cobalt(III) ions in aqueous perchlorate media, 2321.
- nitrido- and oxo-complexes. Part I. Complexes of ruthenium and osmium, 1315.
- perfluoro-alkyl- and -aryl-thiolates. Part II. Molybdenum, tungsten, manganese, iron, and nickel derivatives, 1957.
- ortho-Metallation** and related reactions. Part VI. Triaryl phosphite derivatives of dodecacarbonyltriruthenium, 1667.
- reactions involving some triaryl phosphite derivatives of palladium(II) and platinum(II) dihalides, 1151.
- Methylchloro**- and chloro-species of cadmium, indium, tin, antimony, tellurium, and iodine, vibrational spectra, 465.
- Methylnitricobalt** enneacarbonyls, chemistry. Part IX. Reactions with Grignard and organolithium reagents, 1794.
- Methylseleno**-derivatives of Group IV, 1716.
- Microwave** spectroscopy, application to the study of the mechanism of hydrogen-deuterium exchange in propene by homogeneous catalysts, 584.

- Mixed** halogen complexes of phosphorus. Part I. Preparation and Raman spectra of the chlorobromophosphonium ions, $[\text{PCl}_n\text{Br}_{4-n}]^+$ ($0 \leq n \leq 4$), 1863.
- ligand cobalt(III) compounds of β -diketonates and quadridentate dianion Schiff bases, 1359.
- valence complexes of vanadium with 1,10-phenanthroline and 2,2'-bipyridine, 1182.
- Models** for the interaction of nitrogen with transition metals. Part II. Crystal and molecular structure of carbonylchloro(4-fluorophenyl)di-imide-2C,N'-bis(triphenylphosphine)iridium(III) tetrafluoroborate acetone solvate, 434.
- Molecular** complexes, Schiff-base transition-metal complexes, ^1H n.m.r. investigation of interaction with 1,3,5-trinitrobenzene, 1805.
- orbital method, self-consistent, in calculation of the electronic structure of boranes. Part III. Excited states of cage species, 2277.
- studies of platinum olefin and acetylene complexes: reactions and reaction mechanisms, 1457.
- structure of cycloborataphosphonanes. Part II. Crystal structure of 1,1,3,3,5,5-hexaphenylcycloborataphosphonane, 1295.
- structures of non-geminally substituted phosphazenes. Part IV. Crystal structure of 2,4,4,trans-6,8,8-hexachloro-2,6-bis(dimethylamino)cyclotetraphosphazetetraene, 1453.
- Molten** salts. Solubility of silver chloride and silver bromide and their complexes in anhydrous calcium nitrate-potassium nitrate (1/1.9)melt, 2066.
- Molybdate(v)**. Sodium di- μ -sulphido-bis[(L-cysteinato)-oxomolybdate(v)]dihydrate, crystal and molecular structure, 732.
- Molybdenum** and tungsten carbonyl derivatives, ^{13}C n.m.r. spectra of, 1027.
- thiolates, 1311.
- arene chemistry: arene(π -allyl)molybdenum derivatives containing carboxylate, aminocarboxylate, and related ligands, 1403.
- nucleophilic addition to the cations $[\text{C}_6\text{H}_6\text{Mo}(\pi\text{-C}_5\text{H}_5)_2\text{L}_2]^+$ giving cyclohexadienyl derivatives, 2177.
- some π -allyl, dihydride, dinitrogen, and carbonyl derivatives, 301.
- some bis- π -allylic derivatives, 1952.
- carbonyl, carbene and Lewis base complexes, 1743.
- carbonyl complexes, carbon-13 n.m.r. spectra, 2012.
- cationic carbonylnitrosyl complexes, 2183.
- chlorides, oxidation and reduction by chlorinated alkyl cyanides, 1871.
- Crystal and molecular structure of dicaesium μ -(ethylene-diaminetetra-acetato)-di- μ -sulphido-bis[oxomolybdate(v)] dihydrate, 1173.
- of dicarbonylchlorobis-[*o*-phenylene(dimethylarsino)]-molybdenum(II) tri-iodide-bischloroform, 2664.
- of dicarbonyl- π -cyclopentadienyl[tetrakis(pyrazol-1-yl)borato]molybdenum, 1893.
- of tetrachloro-di- μ_3 -oxo-tetra- μ -propoxo-tetraoxodipropoxotetramolybdenum (2Mo-Mo), 1376.
- Crystal structure of dicaesium octa- μ_3 -chloro-hexachloro-octahedro-hexamolybdate(II), 646.
- of dicarbonyl(π -cyclopentadienyl)[di-(*t*-butyl)methyl-eneamino]molybdenum(II), 2629.
- (II), dicarbonylchloro(π -cyclopentadienyl)-, phosphorus(III) complexes, photochemistry, 1899.
- dicarbonyl(hydrotris(pyrazol-1-yl)borato-*N*(2),*N*(2)',-*N*(2)'')- π -(2-methylallyl)-, crystal and molecular structure, 2444.
- (0), hexacarbonyl-, reaction with thiocyanogen, 1891.
- hexacarbonyl, solution and single-crystal Raman study, 2264.
- Metal perfluoro-alkyl- and -aryl-thiolates. Part II, 1957.
- Reactions of the di- μ -oxo-bis[(L-cysteinato)oxomolybdate(v)] ion, 1388.
- thio-bridged binuclear π -cyclopentadienyl complexes, electrochemical oxidation of, 2268.
- (IV) trimethylstannyl complexes, 1653.
- Mössbauer** and electronic spectral, and magnetic properties of several trinuclear iron(III) carboxylate complexes, 573.
- and magnetic investigations of some iron(II) and iron(III) Schiff base complexes, 676.
- and X-ray p.e. spectroscopy of triphenylphosphine-iridium complexes, 1828.
- effect in europium(III) complexes, 546.
- in tin(II) compounds. Part XIII. Data for the products from molten caesium-tin(II)-halide systems, 666.
- studies of ligand variation on low-valency iron organometallic complexes: the $\text{LFe}(\text{CO})_4$ and $\text{L}_2\text{Fe}(\text{CO})_3$ series, 718.
- parameters for *trans*-tetrachlorobis(triethylphosphine)-tin(IV), 1823.
- spectra and bonding in four-co-ordinate tin compounds containing a tin-cobalt bond, 1694.
- spectra of some cyclopentadienyliron complexes containing a chelating diphosphine ligand, 1873.
- spectroscopic studies (^{151}Eu) of europic oxide, 969.
- spectroscopy, studies in. Part VI. Tin-119 spectra of some trichlorostannyl transition-metal complexes, 37.
- studies of potassium tin(II) sulphate and related tin apatites, 1478.
- ^{99}Ru , of the magnetic properties of ternary and quaternary ruthenium(IV) oxides, 1253.
- study of carbonyl complexes of iron(III): bonding properties of ligands, 2103.
- Multidentate** ligands, co-ordination complexes containing. Part II. Five-co-ordinate nickel(II) and cobalt(II) complexes containing tridentate ligands with Group Vb donors, 143. Part III. The visible spectra of some five-co-ordinate nickel(II) complexes containing tris(*o*-dimethylarsinophenyl)stibine. Trigonal, bipyramidal, and square pyramidal complexes, 1945.

N

Negative-ion mass spectrometry of *closo*-carboranes, 76.

Neopentyl and related alkyls of chromium(IV). Elimination stabilised alkyls. Part II, 770.

Neutron diffraction, crystal structure by, of magnesium sulphate heptahydrate (epsomite), refinement, 816.

Nickel-(II) and nickel(I) complexes with tripod arsine ligands, 681.

-(II), bis(pentane-2,4-dionato)dipyridine-, complexes, pyridine exchange studied by ^{14}N n.m.r., 1896.

-(II) bis(pyrrolidonecarbodithioato)-, crystal structure, 1332.

Nickel (*cont'd.*)

- (II) chelate complexes, kinetics of bidentate ligand exchange, 662.
 - (II) chelates, thermodynamics of bidentate ligand exchange, 19.
 - (II), cobalt(II), and palladium(II) co-ordination properties with methylenebis(diphenylphosphine chalcogenides), 1024.
 - (II) complex *C-rac*-5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane, $[\text{Ni}(\text{tetb})]^{2+}$, in the α -, β -, and γ -configurations, preparations and crystal structure analyses of its salts, 1963.
 - formed by reaction of 1,3-diaminopropane nickel(II) compounds with acetone, 1076.
 - with dithiomalonamide and *NN'*-diphenyldithiomalonamide, 879.
 - with purine bases, relaxation spectra with theophylline, 1031.
 - with some 2,3,4,5-tetrahydro-1*H*-1,5-benzodiazepines, 26.
 - (II). Crystal and molecular structure of acetylacetonato-*C-meso*-(5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane)nickel(II) perchlorate, 1408.
 - of *trans*-dibromobis[di(*t*-butyl)fluorophosphine]nickel(II), 926.
 - of μ -oxalato-di[bis(ethylenediamine)nickel(II)] dinitrate, 1537.
 - Crystal structure of di- μ -tropolonato-bis[aquo(tropolonato)nickel(II)], 697.
 - (II), dithio- and perthio-carboxylato-complexes, electronic spectral studies, 2404.
 - Evidence for a rate-determining chelate-ring-closure mechanism during the formation of the (2,2'-bipyridine)nickel(II) ion in dimethyl sulphoxide solution, 1602.
 - (II), five-co-ordinate complexes, containing tridentate ligands with Group Vb donors, 143.
 - containing tris(*o*-dimethylarsinophenyl)stibine, visible spectra. Trigonal bipyramidal and square pyramidal complexes, 1945.
 - X-ray structural evidence for the influence of geometrical distortion on the spin-state, 641.
 - (III), fluorine compounds, 1995.
 - (II), four- and five-co-ordinate complexes with *cis*-(2-diphenylarsinovinyl)diphenylphosphine and 9,10-bis(diphenylphosphino)phenanthrene, 147.
 - halide complexes of di(*t*-butyl)fluorophosphine, 1783.
 - in distorted tetrahedral environments, transitions to ^1G states, single-crystal spectrum, 1920.
 - Metal perfluoro-alkyl- and -aryl-thiolates. Part II, 1957.
 - (II), monophthalato- complex formation, relaxation kinetic study, 2419.
 - phenyl-substituted stilbenediamine complexes, 1937.
 - pyridine-2,6-dicarboxylate complexes, 1035.
 - sulphite, anhydrous, oxidation to anhydrous nickel(II) sulphate and pyrosulphate in dimethyl sulphoxide-sulphur dioxide, 534.
 - (0) template systems, reaction paths and mechanisms in the catalytic cycloaddition of allene, 2491.
 - thio-bridged binuclear π -cyclopentadienyl complexes, electrochemical oxidation of, 2268.
 - (II) trigonal chelate complexes, circular dichroism, 955.
- Niobium.** Alkoxo(2,2'-bipyridine)trichloroniobium(IV) complexes, 550.

- (IV), bis-(cyclopentadienyl)-, $(\pi\text{-C}_5\text{H}_5)_2\text{NbX}_2$, e.p.r. spectrum, 722.
- Crystal structure of bis[hydroxo(triphenyl)arsonium(V)] dodeca- μ -chloro-hexachloro-octahedro-hexaniobate(2-), 1858.
- Methylniobium(V) chloride, some co-ordination compounds, 961.
- (V), monomethyl- and -tantalum(V) halides and some of their complexes, preparation, 2436.
- pentachloride-phosphorus halide-alkyl halide complexes, 522.
- (V), tris(*NN*-diethyldithiocarbamate)oxo-, crystal structure, 2082.
- Nitrate-metal complexes, structural investigations. Part VII.** Crystal and molecular structure of aquodinitratobis(quinoline)cadmium(II), 2130.
- Nitritochromium(III) complexes, kinetics of the acid hydrolysis, 992.**
- Nitrogen-14 n.m.r. study of pyridine exchange in bis(pentane-2,4-dionato)dipyridine-cobalt(II) and -nickel(II) complexes, 1896.**
- oxides, reaction with some silicon halides and hydride-halides, 1523.
- phosphorus bond, the. Synthesis, characterisation, and i.r. studies of heterocyclic phosphonyl (phosphetan) amides, 1576.
- phosphorus compounds. Crystal structure of 2,4,4,trans-6,8,8-hexachloro-2,6-bis(dimethylamino)cyclotetraphosphazetene, 1453.
- Part XXXIV. The reactions of hexachlorocyclotriphosphazatriene with ethylamine: comparisons with isopropylamine and *t*-butylamine, 709. Part XXXV. Friedel-Crafts reactions of chlorodimethylaminocyclotriphosphazatrienes with benzene, 1883.
- (N-P) $_n$ rings, crystal structure of such compounds. Part XI. 1,2,3,4-Tetraphenyl-2,4-dithiocyclodiphosphazane, $[\text{PhNP}(\text{S})\text{Ph}]_2$, 106.
- silicon compounds. Part IX. Self-dehydrofluorination of tetrafluorosilane-amine adducts as a route to substituted aminofluorosilanes, 83.
- trifluoride and dinitrogen tetrafluoride, aqueous solubilities, 2722.
- α -Nitroketones, cleavage by platinum(II) and platinum(0) and formation of platinum(II) complexes containing fulminate- and carboxylato-groups, 2409.**
- complexing properties. Part II. Complexes of 2-nitroacetophenone and nitroacetone with chromium(III), iron(III), and aluminium(III), 2238. Part III. A stereochemical investigation of some new copper(II) α -nitroketonate complexes and their base adducts with O- and N-donors, 2242.
- Nitrosyl complexes, four- and five-co-ordinate complexes of iridium(I), 1014.**
- Non-aqueous media, mechanism of octahedral substitutions in. Part VIII.** Replacement of chloride by nucleophiles in *trans*-chloro(L)bis(ethylenediamine)cobalt(III) complexes in methanol, 2514.
- Nuclear magnetic double resonance studies of organotin selenides, 2134.**
- magnetic resonance, ^{13}C and ^{31}P , studies on dicarbonyl complexes of ruthenium(II) and ruthenium(I) containing tertiary mono-*t*-butyl- or di-*t*-butyl-phosphines, 311.
- ^{13}C Fourier, application to stereochemical problems in transition metal-olefin complexes, 1672.

Nuclear (contd.)

- coupling constants, correlation with transition metal-ligand bond lengths in tertiary phosphine complexes, 2095.
- ¹H and e.s.r. spectra of cobalt(II) porphyrins, effect of 1,3,5-trinitrobenzene, 1663.
- ¹H. The location of co-ordination sites in copper(II) carboxylates in solution by. Structure and stability of carboxylate complexes. Part XII, 1005.
- ¹H investigation of the formation of molecular salicylideneiminato-cobalt(II), -nickel(II), -copper(II), and -zinc(II) complexes with 1,3,5-trinitrobenzene, 1805.
- method for magnetic titrations, 2587.
- ¹⁴N study, of pyridine exchange in bis(pentane-2,4-dionato)dipyridine-cobalt(II) and -nickel(II) complexes, 1896.
- ³¹P and ¹H, spectra of octahedral trisdimethylphenylphosphine complexes with meridional configurations, 715.
- spectra of complexes of platinum(II), palladium(II), platinum(IV), rhodium(III), and iridium(III) containing three or four trimethylphosphine ligands, 2220.
- spectra of dimeric cupric compounds, 555.
- spectra of symmetrical phosphorus compounds. Part V. ¹H N.m.r. spectrum of *P,P'*-dimethyl-*P,P'*-di-*t*-butyldiphosphine *P,P'*-disulphide, an [AR₆X_n]₂ spin system, 79.
- spectroscopic study of the interactions of a vitamin B₁₂ model complex with amino-acids and oligopeptides, 317.
- studies of aqueous solutions, temperature dependence of ¹H chemical shifts, 1446.
- study of exchange reactions and mixed boron trihalide adducts, boron trihalide adducts of dimethyl sulphide, 1047.
- study of *trans*-tetrachlorobis(triethylphosphine)tin(IV), 1823.
- quadrupole resonance investigation of the comparative differences between hexachloro-stannate, -tellurate, and -plumbate resulting from cationic effect, 357.
- studies, correlation with e.s.c.a. studies of square-planar platinum complexes, 169.
- spin, ²J(PH), coupling constants, absolute signs, in methylplatinum(II) complexes containing tertiary phosphines, and stereochemistry, 166.

O

- Observations** on dislocations in tetraphenyltin and its isomorphs, 16.
- Octacarbonyldicobalt**, reactions with some ditertiary phosphines and arsines, 2086.
- Octahedral** gold cluster: crystal and molecular structure of hexakis[tris-(*p*-tolyl)phosphine]-octahedro-hexagold bis-(tetraphenylborate), 2423.
- Optical** rotatory power of co-ordination compounds. Part XVI. Intermediate exciton coupling in the circular dichroism of trisbipyridyl complexes, 944. Part XVII. The circular dichroism of trisbipyridyl and trisphenanthroline complexes, 949. Part XVIII. The circular dichroism of trigonal nickel(II) chelate complexes, 955.
- Optically** active complexes of Schiff bases. Part II. Complexes of cobalt(II) with tetradentate Schiff bases and their reactivity with oxygen, 754.

co-ordination compounds. Part XXXI. Stereoselective autoxidations of dimeric vanadium(IV) tartrate complexes, 125. Part XXXII. Potassium (+)tris[L-cysteinesulphinato(2-)-SN] cobaltate(III), a versatile agent for resolution of 3+ species, 933.

- Organobismuth(v)** compounds. Part VII. Preparation, characterisation, and vibrational spectra of four- and five-co-ordinate tetraphenylbismuth(v) derivatives, 1394.
- Organodigermanes**, reactions of, 1357.
- Organonitrogen** ligands in transition-metal carbonyl complexes, X-ray photoelectron spectroscopic studies, 2143.
- Organosilicon** chemistry. Part X. The reaction of diazomethylsilane with trifluoroacetonitrile and cyanogen halides to give triazoles, 483.
- Orthovanadate**, rapid acidification, 2476.
- Osmium** and ruthenium, some reactions with dimethyl(1-naphthyl)phosphine, 2078.
- carboxylato(triphenylphosphine) derivatives, 1912.
- (0) cationic nitrosyl complexes, 478.
- Complexes derived from a carbonylosmium anion. Chemistry of the metal carbonyls. Part LXVI, 972.
- Crystal and molecular structure of heptacarbonyl-μ₂-diphenylacetylene-μ-(1,2,3,4-tetraphenylbutadiene-1,4-diyl)-triangulo-triosmium, 1933.
- Evidence for dicarbonyldinitrosylosmium from frozen-gas matrix i.r. at 20 K, 1321.
- (II) and (IV), hydrido-complexes, 997.
- isonitrile complexes and their reactions to give hydride, amine, and carbene complexes, 1433.
- nitrido- and oxo-complexes, 1315.
- nitrosylamines, preparation and properties, 217.
- Oxidative addition reactions of triphenylphosphine with dodecacarbonyltriosmium, 529.
- some benzyne complexes derived from dimethylphenylphosphine or dimethylphenylarsine, 2589.
- trimethyl- and triethyl-phosphine complexes, carbon-hydrogen cleavage reactions, 2727.
- Oxidation** and reduction of some tungsten, molybdenum, and vanadium chlorides by chlorinated alkyl cyanides, 1871.
- of cysteine and related thiols in the presence of ethylenediaminetetra-acetic acid. Metal-ion catalysis in some reactions of hexacyanoferrate(III) ions. Part II, 1281.
- of thiosulphate ions by copper(II) ions, kinetics and mechanism, in aqueous ammonia solution, 889.
- of uranium(IV) ions by halogens in aqueous solution, kinetics. Part I. Iodine and bromine, 134. Part II. Chlorine, 138.
- studies of some η-cyclopentadienyl bridging sulphido- and phosphino-derivatives of iron. Reactions of metal carbonyl derivatives. Part XV, 2341.
- Oxidative** addition reaction of platinum acetylacetonate with iodine in solid state and solution. Crystal structure and equilibrium studies of *trans*-bis(acetylacetonato)-di-iodoplatinum(IV), 294.
- reactions of triphenylphosphine with dodecacarbonyltriosmium, 529.
- Oxide** bronzes, thermochemistry. Part I. Sodium vanadium bronzes Na₂V₂O₆ with *x* between 0.2 and 0.33, 30.
- Oxidoperoxovanadate(v)** complexes with bidentate ligands, 1137.
- μ₃-Oxotrimetal acetato-complexes of chromium, manganese, iron, cobalt, rhodium, and iridium, 2565.

P

- Palladium**, π -allylic- complexes, ^1H and ^{13}C n.m.r. studies. Transition metal-carbon bonds. Part XXXIV, 2390.
- (II), 2,2'-bipyridyl complexes, solvent effects on the electronic spectra, 132.
 - (II), bis(dialkylphosphinodithioato)-, reaction with ligands containing Group Vb atoms. Metal complexes of sulphur ligands. Part IV, 2124.
 - (II), *cis*-bis(dimethyl(phenyl)phosphine)bis(5-methyl-tetrazolato)-, crystal structure, 371.
 - bis(*cis*-1,2-diphenylethylene-1,2-dithiolato)-, 1:1 adduct with cyclohexa-1,3-diene, crystal structure, 821.
 - (II) carbene complexes, 514.
 - thermally induced isomerisations, 906.
 - carbonyls, infrared spectra and structures of matrix-isolated $\text{Pd}(\text{CO})_4$, $\text{Pd}(\text{CO})_3$, $\text{Pd}(\text{CO})_2$, PdCO , 1079.
 - trans*-chlorohydrido(triethylphosphine)-, crystal structure, 354.
 - (II), cobalt(II), and nickel(II) co-ordination properties with methylenebis(diphenylphosphine chalcogenides), 1024.
 - (II) complexes containing ligands of the type $\text{PR}_n\text{Q}_{3-n}$ ($n = 0, 1, \text{ or } 2$; $\text{R} = \text{Me, Et, Bu}^t, \text{ or Ph}$; $\text{Q} = \text{CH}_2\text{OCOMe or CH}_2\text{OH}$), 2021.
 - containing 'mixed' nitrogen-arsenic polydentate ligands, 175.
 - containing three or four trimethylphosphine ligands, n.m.r. spectra, 2220.
 - (II) compounds, reactions with carbodi-imides, 1867.
 - Crystal and molecular structure of di- μ -acetato-bis[(2-methylallyl-3-norbornyl)palladium(II)], 883.
 - of dichloro[bis(diphenylphosphino)ethylamine]palladium(II), 1443.
 - (II) *trans*-dithiocyanatobis[(3,3-dimethylbutynyl)diphenylphosphine]-, synthesis, crystal structure, and i.r. spectra, 488.
 - (II), tertiary phosphine and tertiary arsine complexes, mercuric halide adducts, 783.
 - Triaryl phosphite derivatives of palladium(II) dihalides, 1148, 1151.
- Paramagnetic hydrido-complexes of cobalt(II)**, 748.
- Pentaborane(9)**, reaction with charged and neutral ligand species. A new synthesis of the tetradecahydrononaborate(1-) ion, 179.
- Pentacyanocobaltate(II)**, aqueous, a Raman spectroscopic study of hydrogenation, 2546.
- Pentamethylcyclopentadienyl-rhodium and -iridium complexes**. Part VII. Mono-, di-, and tri- μ -hydrido-complexes, 1901.
- Permanganate**, potassium, thermal decomposition, 1701.
- Phases**, obtained from the frozen molten systems caesium-tin-halide and caesium-lead-halide, 1985.
- Phenacyl kojate** (5-phenacyloxy-2-hydroxymethyl-4H-pyran-4-one), alkali metal complexes, 1380.
- Phosphetan** 1-oxide, 1-bromo-2,2,3,4,4-pentamethyl-, preparation, properties, and vibrational spectra, 2701.
- compounds, mass spectrometric investigations, and differentiation of *cis*- and *trans*-ring methyl groups by aromatic shielding, 2641.
- Phosphite and phosphonate complexes**. Part IV. *trans*-Influence in mercury(II) complexes. X-Ray crystal structure analysis of bis(dimethyl phosphonato)mercury(II), 560.
- Phosphonitrile**, 1,*cis*-3,*trans*-5,*trans*-7-tetrakis(dimethyl-amino)-1,3,5,7-tetrafluorotetra-, 396.
- Phosphorinan**, 2,*cis*-4,*trans*-6-triphenyl-2,4,6-trithioxo-1,3,5,2,4,6-trioxatri-, crystal and molecular structure, 2032.
- Phosphorus-31** and ^1H n.m.r. spectra of octahedral trisdimethylphenylphosphine complexes with meridional configurations, 715.
- boron compounds. Crystal structure of 1,1,3,3,5,5-hexaphenylcyclotriborataphosphonane, 1295.
 - compounds, symmetrical, n.m.r. spectra. Part V. ^1H N.m.r. spectrum of *P,P'*-dimethyl-*P,P'*-di-*t*-butyldiphosphine *P,P'*-disulphide, an $[\text{AR}_4\text{X}_2]_3$ spin system, 79.
 - Crystal and molecular structure of 1-benzylphosphole by X-ray analysis, 1888.
 - Crystal structure of 2-methyl-5-(tetrafluorophosphoranyl)-pyrrole, 2301.
 - Diazaphosphetidinones with four-co-ordinate phosphorus, 813.
 - fluorine chemistry. Part XXIX. Reaction of amino-silanes and *N*-alkyl(or aryl)hexamethyldisilazanes with fluorophosphoranes: chemical and spectroscopic studies on dialkylamino fluorophosphoranes and fluoro-1,3,2,4-diazadiphosphetidines, 2687.
 - nitrogen bond, the. Synthesis, characterisation, and i.r. studies of heterocyclic phosphoryl (phosphetan) amides, 1576.
 - nitrogen compounds. Crystal structure of 2,4,4,*trans*-6,8,8-hexachloro-2,6-bis(dimethylamino)cyclo-tetraphosphazetene, 1453.
- Part XXXIV. The reactions of hexachlorocyclo-triphosphazatriene with ethylamine: comparisons with isopropylamine and *t*-butylamine, 709. Part XXXV. Friedel-Crafts reactions of chlorodimethylaminocyclo-triphosphazatrienes with benzene, 1883. Part XXXVI. Alkylthio- and arylthio-cyclo-tetraphosphazetenes, 2736. Part XXXVII. The syntheses, properties, and some reactions of (2,2,2-triphenylphosphazene-1-yl)-cyclo-triphosphazatrienes and -cyclo-tetraphosphazetenes, 2740.
- (N-P) $_n$ rings, crystal structure of such compounds. Part XI. 1,2,3,4-Tetraphenyl-2,4-dithiocyclo-diphosphazane, $[\text{PhNP}(\text{S})\text{Ph}]_2$, 106.
- organo- selenides, studies by heteronuclear magnetic triple resonance, 2162.
- Phenylphosphonic dichloride and phenylphosphonothionic dichloride, irradiated, e.s.r. study, 1494.
- Preparation and Raman spectra of the chlorobromophosphonium ions, $[\text{PCl}_n\text{Br}_{4-n}]^+$ ($0 \leq n \leq 4$), 1863.
- radicals, $\cdot\text{PL}_3$ and $\cdot\text{PL}_4$ radicals, magnetic properties. Unstable intermediates. Part CXXXVI, 2509.
- sulphides, i.r. and Raman spectra, 691.
- Vibrational spectra of the compounds $\text{CF}_3\cdot\text{PX}_2$ where $\text{X} = \text{halogen or hydrogen}$, 1691.
- Photochemical** (solid-state) and energy-transfer processes in some hexa-amminechromium(III) salts, 368.
- Photochemistry** and infrared spectra of the complex pentacarbonyliron in solid matrices at 4 and 20 K, evidence for formation of the complex tetracarbonyliron, 1351.
- of π -cyclopentadienylcarbonylmetal halides in dimethyl sulphonide and related solvents, 1475.
- of ferrocenyl ketones and acids in dimethyl sulphoxide and related solvents, 1468.

Photochemistry (contd.)

of phosphorus(III) complexes of bromocarbonyl(π -cyclopentadienyl)iron(II) and dicarbonylchloro(π -cyclopentadienyl)-molybdenum(II) and -tungsten(II), 1899.

Photoelectron spectra and bonding in metal-trifluorophosphine complexes, 2226.

of some silyl and germyl transition-metal carbonyls and related species, 22.

of some simple fluorosilanes, 2401.

He(I) spectrum of sulphur trioxide, 526.

Platinate(II), dicarbonyltetrahalogeno- salts, 2355.**Platinum. A π -bonded trifluoroacetone nitrile complex of platinum(0), 1292.**

-(II) acetylacetonato(chloro)-2-chloromethylpyridine-, ^1H n.m.r. behaviour, 684.

Alkyl and aryl migration from carbon monoxide to platinum promoted by silver ion, 1267.

-(IV) and (II) complexes. Behaviour of diamine-*af*-dibromo-dinitroplatinum(IV) complexes and the adduct *ac*-dinitro-*bd*-bis(pyridine)platinum(II)-boron trifluoride in acidic solutions, 897.

-(II) and platinum(0), cleavage of α -nitroketones, and formation of platinum(II) complexes containing fulminato- and carboxylato-groups, 2409.

-(II) and platinum(IV), complexes containing three or four trimethylphosphine ligands, n.m.r. spectra, 2220.

-(IV), aryl-, complex, aromatic substitution reactions, 2459.

-(II), 2,2'-bipyridyl complexes, solvent effects on the electronic spectra, 132.

-(IV) *trans*-bis(acetylacetonato)di-iodo-, crystal structure and equilibrium studies. Oxidative-addition reaction of platinum acetylacetonate with iodine in solid state and solution, 294.

-(II), bis(dialkylphosphinodithioato)-, reaction with ligands containing Group Vb atoms. Metal complexes of sulphur ligands. Part IV, 2124.

trans-bis(triethylphosphine) complexes, magnetic double resonance studies, 2370.

-(II) carbene complexes, 514.

thermally induced isomerisations, 906.

chlorofluoro-olefin complexes, mechanism of rearrangement. Reactions of co-ordinated ligands. Part III, 2099.

-(II) complexes containing ligands of the type $\text{PR}_n\text{Q}_{3-n}$ ($n = 0, 1, \text{ or } 2$; $\text{R} = \text{Me, Et, Bu}^t, \text{ or Ph}$; $\text{Q} = \text{CH}_2\text{OCOMe or CH}_2\text{OH}$), 2021.

of aquo- and phenyl-(diethylenetriamine), 1070.

of *NN*-diethyldithiocarbamates, *O*-ethyl dithiocarbonate (xanthate), and *OO'*-diethyl dithiophosphate with tertiary phosphines, 254.

of hexamethyl Dewar benzene and dehydrohexamethyl Dewar benzene, 264.

-(IV), *af*-dichloro-*bc*-bis(pyridine)-*de*-trimethylene-, mechanism of redox isomerisation to the platinum(II) complex of pyridinium propylide $[\text{PtCl}_2(\text{C}_5\text{H}_5\text{NCH}_2\text{Et})(\text{py})]$, 102.

cis-dimethylbis(trimethylphosphine)- and some related systems, ^1H n.m.r. spectra, 2450.

dithiolato-complexes, rates and mechanisms of substitution reactions, 2280.

cis-fluoro(1,1,1,3,3,3-hexafluoroisopropyl)bis(triphenylphosphine)-, crystal and molecular structure, 1840.

-fluoro-olefin complexes, Lewis acid-promoted vinyl rearrangement and halogen exchange, 2069.

-(0) hexafluorobut-2-yne complex, electrophilic additions, 636.

hydrido-complexes, insertion reactions with olefins: hydrolysis of platinum-carbon σ -bonds, 1848.

internal metallation of *t*-butyldi-*o*-tolylarsine and di-*t*-butyl-*o*-tolylarsine, 2394.

metals, complexes. Part III. Arylazo and aryldimine derivatives, 2713.

sulphamato-complexes, 524.

-(II) methyl-, complexes containing tertiary phosphines, stereochemistry and absolute signs of $^3\text{J}(\text{PH})$ nuclear spin coupling constants, 166.

Molecular orbital studies of platinum olefin and acetylene complexes: reactions and reaction mechanisms, 1457.

phosphine, phosphite, and cyclo-octa-1,5-diene complexes, reactions with fluorocarbons, 381.

Potassium trichloroammineplatinum(II) monohydrate, single-crystal Raman spectrum, 2298.

-silicon bonds, stereochemistry of formation and cleavage, 2255.

Single-crystal i.r. and Raman spectra of Magnus' green salt, tetra-ammineplatinum(II) tetrachloroplatinum(II), 1450.

six-co-ordinate hydride complexes, 854.

square-planar complexes, e.s.c.a. studies and correlations with n.q.r. studies, 169.

Structure of *cyclo*-bis(μ -acetato- μ -nitrosyl)-bis[di- μ -acetato-di-platinum(II)], 1194.

-(II), tertiary phosphine and tertiary arsine complexes, mercuric halide adducts, 783.

Triaryl phosphite derivatives of platinum(II) dihalides, 1148, 1151.

Polarities and directional polarisabilities of trimethylamine adducts of boron trihydride and boron trihalides. Stereospecific solute-solvent interactions, 1132.

Polarography of some rhodium(III) complexes, 1187.

Poly(4- and 5-acrylamidosalicylic acids). Part IV. Selectivity in the extraction of metal cations from aqueous solution, 1129.

-fluoroaromatic derivatives of metal carbonyls. Part IX. Reactions of pentafluorophenylsilver(I) with some transition metal halogeno-complexes; oxidative-addition reactions of the complex carbonyl(pentafluorophenyl)bis(triphenylphosphine)iridium(I), 2653.

-meric species, non-existence of, in aqueous perchloric acid solutions of the hexa-aquocobalt(III) ion, 900.

-nuclear compounds. Part XXV. Some reactions of α -tetrahydridododecacarbonyltetraruthenium with cyclic olefins, 2056.

Potassium carbonate, anhydrous, crystal structure, 70.

isothiocyanate, complex formed with dibenzo-24-crown-8 (6,7,9,10,12,13,20,21,23,24,26,27-dodecahydrodibenzo- $[b,n]$ -1,4,7,10,13,16,19,22-octaoxacyclotetradecan), 2469.

liquid, reactions with the oxides of vanadium, 2618.

monoxide, reactions with the oxides of vanadium, 2614.

tin(II) sulphate and related tin apatites: Mössbauer and X-ray studies, 1478.

Preparation and characterisation of alkylthio- and phenylthio-phosphetan 1-oxide derivatives. Mass spectrometric investigations of 40 phosphetan 1-oxide compounds. Differentiation of *cis*- and *trans*-ring methyl groups by aromatic shielding, 2641.

of polynuclear cobalt(III) complexes with bridging carboxylato-ligands, 2548.

Preparation (contd.)

- and identification of various chlorodifluoro-oxosulphur(vi) salts. Evidence for chlorotrifluorosulphur(vi) oxide, 2528.
- and infrared spectroscopic characterisation of some (oxydiacetato)uranyl(vi) complexes, 1308.
- and Mössbauer spectra of some cyclopentadienyliron complexes containing a chelating diphosphine ligand, 1873.
- and properties of 1-bromo-2,2,3,4,4-pentamethylphosphetan 1-oxide, $C_5H_{10}P(O)Br$, and a comparison with the chloro-compound; hydrolysis of these to the anhydride and acid. Vibrational spectra, 2701.
- of hexamethyltungsten, 872.
- of some osmium nitrosylamines, 217.
- of the geometric isomers of the dichloro(3,6-diazaoctane-1,8-diamine)rhodium(III) cation, 1462.
- and reactions of the carbonyl(hydrotripyrzole-1-ylborato)copper(I) complex. Group Ib metal chemistry. Part I, 2433.
- and some reactions of Group VI metal monodentate bisphosphine carbonyl complexes. Mechanistic aspects of chelate-ring formation, 347.
- and X-ray powder diffraction patterns of the sodium vanadates $NaVO_3$, $Na_4V_2O_7$, and Na_3VO_4 , 1513.
- crystal and molecular structure of *trans*-dibromobis[di(*t*-butyl)fluorophosphine]nickel(II), 926.
- of hydridotetrakis(triphenylphosphine)ruthenium(II) hexafluorophosphate and related complexes, 743.
- of monomethyl-niobium(v) and -tantalum(v) halides and of some of their complexes, 2436.
- properties, and vibrational spectra of complexes containing the $AuCl_2^-$, $AuBr_2^-$, and AuI_2^- ions, 1845.
- and crystal structure analyses of salts of the nickel(II) complex *C-rac*-5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane, $[Ni(tetb)]^{2+}$, in the α -, β -, and γ -configurations. Structural studies on co-ordinated macrocyclic ligands. Part III, 1963.
- ^{13}C and ^{31}P n.m.r. studies on dicarbonyl complexes of ruthenium(II) and ruthenium(I) containing tertiary mono-*t*-butyl- or di-*t*-butyl-phosphines, 311.
- Properties of isocyanide ligands in metal complexes.** Characterisation and voltammetric properties of bis-(tertiary phosphine)tris(isonitrile)cobalt(I) complexes, 1747.
- Protolysis of cyclopentadienyltin(II) compounds by hydroxyderivatives.** Tin(II) oximes and hydroxylamines. Derivatives of divalent germanium, tin, and lead. Part I, 940.
- Proton and phosphorus-31 n.m.r. spectra of octahedral trisdimethylphenylphosphine complexes with meridional configurations,** 715.
- chemical shift and hydration of the hydronium ion in aqueous acids, 49.
- chemical shifts of aqueous aluminium salt solutions, 1177.
- of water in cationic hydration complexes and their contribution to water shifts in electrolyte solutions, 42.
- exchange in the base hydrolysis of deuteriated *trans*-dichlorobis(ethylenediamine)cobalt(III) and *trans*-dichloro[(*RS*)-1,9-diamino-3,7-diazanonane]cobalt(III) cations, 1989.
- magnetic resonance studies of fluoride and acetate solutions in glacial acetic acid. The shielding and thermodynamics of strong hydrogen bonds, 2154.
- study of the exchange of trimethyl phosphate on the tetrakis(trimethyl phosphato)beryllium(II) complex, 2075.
- behaviour of acetylacetonato(chloro)-2-chloromethylpyridineplatinum(II), 684.
- Pseudohalide complexes of trialkylgallium(III),** 1428.
- Pulse radiolysis of titanium(III) and other metal(III) ions in the presence of formic acid,** 1724.
- studies on complexes of iridium, 1799.
- Purine bases, nickel(II) complexes with, relaxation spectra with theophylline,** 1031.
- Pyridine-2,6-dicarboxylate complexes of cobalt(III), nickel(II), rhodium(II), and rhodium(III). Studies on metal carboxylates. Part IV. Synthesis, spectral and magnetic properties, and a study of rhodium 3d binding energies by X-ray photoelectron spectroscopy,** 1035.
- N*-oxide and quinoline *N*-oxide complexes with bivalent manganese, cobalt, nickel, copper, and zinc thiocyanates and selenocyanates, 2637.
- 2-Pyridylamine complexes of cobalt(II) and cobalt(III), chemistry,** 2172.
- Pyrrrole pigments, cobalt(II) and zinc(II) complexes of some tripyrrrene-*b* and bilene-*b* ligands,** 1734.
- transition metal complexes of 3,3',4,4'-tetrachloro-5,5'-diethoxycarbonyldipyrromethene, 1729.

Q

- Quadrupole-induced relaxation and chemical exchange, resulting in resonance line broadening in the n.m.r. spectra of some boron-nitrogen adducts,** 2139.
- Quantum efficiencies of fluorescent terbium(III) chelates in the solid state,** 336.
- Quinone adducts of cobalt(II) and iron(II) complexes with a quadridentate Schiff's base,** 765.

R

- Raman and i.r. spectra of a single crystal of vanadium(V) oxide,** 291.
- of cycloheptasulphur, 599.
- of some phosphorus sulphides, 691.
- spectra of multiply bonded metal species, 1067.
- of the chlorobromophosphonium ions, $[PCl_nBr_{4-n}]^+$ ($0 \leq n \leq 4$), 1863.
- spectroscopic study of the hydrogenation of aqueous pentacyanocobaltate(II), 2546.
- spectrum of potassium trichloroammineplatinum(II) monohydrate, 2298.
- solution, and normal co-ordinate analysis of dioxygen difluoride, 1928.
- study (solution and single-crystal) of $M(CO)_6$, where M = chromium, molybdenum, and tungsten, 2264.
- Rapid acidification of orthovanadate,** 2476.
- of solutions containing tungstate anions, 224.
- Rates and mechanisms of substitution reactions of platinum dithiolato-complexes,** 2280.
- of formation and dissociation of complexes of manganese(II) with the ligands 1,10-phenanthroline, 2,2'-bipyridine, and 2,2',2''-terpyridine in anhydrous methanol, 399.

- Reaction of aminosilanes and *N*-alkyl(or aryl)hexamethyldisilazanes with fluorophosphoranes:** chemical and spectroscopic studies on dialkylaminofluorophosphoranes and fluoro-1,3,2,4-diazadiphosphetidines. Phosphorus-fluorine chemistry. Part XXIX, 2687.
- paths and mechanisms in the catalytic cycloaddition of allene over nickel(0) template systems,** 2491.
- Reactions of a terminal phosphido-group in an organo-iron complex.** Part I. Some oxygen, sulphur, and selenium derivatives, 1124.
- of cobalt(I) complexes with ammonium and sulphonium ions and organic halides,** 2034.
- of co-ordinated ligands.** Part II. The reaction of tricarbonylcycloheptatrieneiron and tricarbonyl(methyl-, bromo-, and phenyl-cyclo-octatetraene)iron with hexafluoroacetone, dicyanobis(trifluoromethyl)ethylene, and tetracyanoethylene, 1564.
- of μ -hydroxo-dicobalt(III) complexes.** Part X. Kinetic studies of the reaction of the μ -amido- μ -hydroxo-bis[tetra-amminecobalt(III)] complex with phosphate ions in aqueous perchloric acid solutions and the characterisation of the μ -amido- μ -phosphato-bis[tetra-amminecobalt(III)] complex, 829.
- of liquid sodium with transition-metal oxides.** Part VI. Oxides of vanadium, 1520.
- of low-valent metal complexes with fluorocarbons.** Part XXVII. Zerovalent nickel, palladium, and platinum, and iridium(I), palladium(II), and platinum(II) complexes with bis(trifluoromethyl)diazomethane, 1620.
- of metal carbonyls.** Part III. Steric and stereochemical limitations of higher substitution of manganese carbonyl bromide, 841.
- of pentafluorophenylsilver(I) with some transition metal halogeno-complexes; oxidative-addition reactions of the complex carbonyl(pentafluorophenyl)bis(triphenylphosphine)iridium(I).** Polyfluoroaromatic derivatives of metal carbonyls. Part IX, 2653.
- of sodium oxide with the oxides VO_2 , V_2O_3 , VO , and vanadium metal,** 1517.
- of the carbonyl group in co-ordinated keto-carboxylates,** 1699.
- Reactivity of co-ordinated ligands.** Part XV. Formation of complexes containing Group V donor atoms and metal-carbon σ -bonds, 404.
- Rearrangement of metal-stabilised carbocations containing cyclopropyl and other alkyl groups to give cyano- and isocyano-complexes: reactions of Group VI metal isocyano-complexes with nucleophiles,** 2119.
- Redistribution reactions of some transition-metal chelates.** Part I. Thermodynamics of bidentate ligand exchange between nickel(II) chelates, 19. Part II. Kinetics of bidentate ligand exchange between chelate complexes of nickel(II), 662.
- Redox isomerisation of *af*-dichloro-*bc*-bis(pyridine)-*de*-trimethyleneplatinum(IV) to the platinum(II) complex of pyridinium propylide $[\text{PtCl}_2(\text{C}_6\text{H}_5\text{NCH}_2\text{Et})(\text{py})]$,** 102.
- Reduction of tetranuclear μ -oxalato-cobalt(III) complexes by the ions chromium(II) and vanadium(II),** 736.
- Reflectance, i.r. single-crystal, spectrum of potassium tetraoxochromate(VI),** 1426.
- Relaxation kinetic study of monophthalatonickel(II) complex formation,** 2419.
- spectra and stability constants of L-proline and L-hydroxyproline metal complexes,** 278.
- with theophylline; complexes of the nickel(II) ion with purine bases,** 1031.
- Resolution of 3+ species using the versatile agent potassium (+)tris[L-cysteinesulphinato(2-)-SN]cobaltate(III),** 933.
- Resonance line broadening due to chemical exchange and quadrupole-induced relaxation in the n.m.r. spectra of some boron-nitrogen adducts,** 2139.
- Rhenate(IV) ions, hexabromo- and hexachloro-, kinetics of aquation,** 902.
- Rhenium(III) and rhenium(IV) complex halides, and $\text{Re}_2(\text{NCS})_8^{2-}$ and $\text{Re}(\text{NCS})_6^{2-}$, X-ray p.e. spectra,** 1039.
- (I) and rhenium(II) dinitrogen complexes,** 612.
- germylpentacarbonyl-,** 214.
- hexafluoride and pentachloride, enthalpies of formation; the exchange reaction between rhenium hexafluoride and boron trichloride,** 501.
- rhenium multiple bonds, structural conclusions concerning compounds with,** 2304.
- Rhodium(II) and (III) pyridine-2,6-dicarboxylate complexes,** 1035.
- (I), bromo[tris(2-vinylphenyl)phosphine]-, crystal structure,** 2202.
- carboxylato(triphenylphosphine) derivatives,** 1912.
- (III), complexes containing three or four trimethylphosphine ligands, n.m.r. spectra,** 2220.
- (III) complexes, polarography,** 1187.
- (I) complexes, synthesis and structure. Transition-metal complexes of 1,3-dienes.** Part I, 2195.
- Crystal and molecular structure of di- μ -chloro-tetrakis(4-methylpenta-1,3-diene)dirhodium(I),** 1484.
- Crystallographic characterisation of the carbidopentadecacarbonylhexarhodate dianion,** 651.
- (III), dihalogenotetrapyridine- salts, solvates and adducts,** 2009.
- (I) fluorophosphine complexes, ligand exchange studies,** 195.
- (I), Group VB chalcogenide cyclo-octa-1,5-diene complexes, synthesis and reactivity,** 2167.
- halogen bonds, X-ray photoelectron spectra of compounds containing, and of rhodium(II) acetate and its derivatives: rhodium 3d and halogen *np* binding energies,** 116.
- (I) hexafluorobut-2-yne complex, electrophilic additions,** 636.
- (I), interaction of hydridocarbonyltris(triphenylphosphine) complexes of, with organic acids,** 929.
- isocyanide complexes (and iridium).** Part I. Tetrakis-isocyanide species, their oxidative addition reactions, and some allyl complexes, 2039. Part II. Four- and five-co-ordinate complexes containing tertiary phosphines, and some oxidative addition reactions, 2046.
- pentamethylcyclopentadienyl mono-, di-, and tri- μ -hydrido-complexes,** 1901.
- Preparation and properties of the geometrical isomers of the dichloro(3,6-diazaoctane-1,8-diamine)rhodium-(III) cation,** 1462.
- (I), rhodium(II), palladium(II), and platinum(II) complexes containing ligands of the type $\text{PR}_n\text{Q}_{3-n}$ ($n = 0, 1, \text{ or } 2$; $\text{R} = \text{Me, Et, Bu}^t, \text{ or Ph}$; $\text{Q} = \text{CH}_2\text{OCOMe or CH}_2\text{OH}$),** 2021.
- (III), tertiary arsine complexes derived from hexafluorobut-2-yne and 3,3,3-trifluoropropyne,** 2578.
- trichlorotris(diethylphenylphosphine)-, crystal and molecular structure,** 1789.

Rhodium (contd.)

tri-halogenotripyridine-, halogenocarbon solvates. Adducts of co-ordination compounds. Part IX, 2002.
trimethylphosphine complexes, octahedral, vibrational spectra, 1489.

Rubidium, di-, tris(hexafluoroacetylacetonato)sodate, crystal structure, and anionic hexafluoroacetylacetonato complexes of alkali and other metals, 2188.

o-nitrophenolato-bis(1,10-phenanthroline) complexes, crystal and molecular structures, 2347.

Ruthenate(II), (bicyclo[2.2.1]hepta-2,5-diene)carbonyltri-halogeno- complexes, 2112.

hexacyano-, γ -irradiated, e.s.r. studies, 965.

Ruthenium and osmium, some reactions with dimethyl(1-naphthyl)phosphine, 2078.

-(III) and ruthenium(II) complexes containing triphenylarsine and -phosphine and other ligands, 1770.

-(I) and ruthenium(II) dicarbonyl complexes containing tertiary mono-*t*-butyl- or di-*t*-butyl-phosphines, ^{13}C and ^{31}P n.m.r. studies, 311.

-(II), bis(dithioformato)bis(triphenylphosphine)-, crystal and molecular structure, 2646.

bis-(π -2-methylallyl)bis(trimethyl phosphite)-, crystal and molecular structure. An example of asymmetric π -bonding between methylallyl ligands and ruthenium, 778.

-(II), carbonyltriphenylphosphine-, complexes, synthesis and catalytic properties, 2247.

carboxylato-triphenylphosphine complexes, homogeneous hydrogenation catalysts for alkenes, 846.

carboxylato(triphenylphosphine) derivatives, 1912.

-(O) cationic nitrosyl complexes, 478.

chloronitrosylbis(triphenyl-, methyl-diphenyl-, and dimethylphenyl-phosphine)-, reactions with fluorocarbons, 375.

-(II) dichlorotetrakis(dimethyl sulphoxide), as a source material for some new complexes, 204.

-(II), hydridotetrakis(triphenylphosphine)-, hexafluorophosphate and related complexes, preparation, 743.

-99 Mössbauer studies of the magnetic properties of ternary and quaternary ruthenium(IV) oxides, 1253.

nitrido- and oxo-complexes, 1315.

α -tetrahydridododecacarbonyltetra-, reactions with cyclic olefins. Polynuclear compounds. Part XXV, 2056.

Triaryl phosphite derivatives of dodecacarbonyltri-ruthenium. *ortho*-Metallation and related reactions. Part VI, 1667.

S

Samarium-151, β -decay of, studies by europium-151 Mössbauer spectroscopy, 2364.**Scandium(III)**, Di- μ -chloro-bis[η -dicyclopentadienyl-scandium(III)], crystal structure, 2487.**Schiff base**, and β -diketonate mixed ligand complexes with cobalt(III), 1359.

-cobalt complexes, steric effects in reversible oxygenation. Part I. Crystal and molecular structure of the optically active and *meso*-forms of *NN'*-butylidenebis(salicylideneiminato)cobalt(II), 419.

quadridentate, quinone adducts of cobalt(II) and iron(II) complexes with, 765.

optically active complexes of. Part II. Complexes of cobalt(II) with tetradentate Schiff bases and their reactivity with oxygen, 754.

Selectivity in the extraction of metal cations from aqueous solution. Poly(4- and 5-acrylamidosalicylic acids). Part IV, 1129.

Selenium, Bis(pentafluoroethyl)triselenide and perfluoroethylidisenylperfluoroacetyl fluoride. Reaction of tetrafluoroethylene with $\text{Se}_8(\text{AsF}_6)_2$ and $\text{Se}_8(\text{Sb}_2\text{F}_{11})_2$, 2314.

Crystal structure of tetra-arsenic tetraselenide, 1703.

Methylseleno-derivatives of Group IV, 1716.

solutions of SeF_4 and $\text{SeF}_4\cdot\text{BF}_3$ in hydrogen fluoride solvent system, 67.

weak complexes (and sulphur). Part II. Complex species of SO_2 , SOCl_2 , and SO_2Cl_2 with the thiocyanate ligand, 2148.

Selenocyanates and thiocyanates of bivalent manganese, cobalt, nickel, copper, and zinc, complexes with pyridine *N*-oxide and quinoline *N*-oxide, 2637.

Self-dehydrofluorination of tetrafluorosilane-amine adducts as a route to substituted amino-fluorosilanes. Silicon-nitrogen compounds. Part IX, 83.

Series of tricarbonyl(polyene aldehyde)iron complexes, 1997.

Serinate, formation constants for the -proton, -manganese(II), -iron(II), -cobalt(II), -nickel(II), -copper(II), and -zinc(II) systems, 1064.

Seven-co-ordination in μ -oxalato-bis[(di-*n*-propyl sulphoxide)nitratodiphenyltin(IV)]: spectroscopic properties and X-ray crystal structure, 2557.

Silane diazomethyltrimethyl-, reaction with trifluoroacetonitrile and cyanogen halides to give triazoles, 483.

Silanes and germanes, reactions with iridium complexes. Part I. Reactions with Vaska's compound, 1287.

Silazane, hexamethylcyclotri-, vibrational spectrum, 410.

Silicates. Trimethylsilyl derivatives for the study of silicate structures. Part III. Sodium silicate hydrates, 1324.

Silicon-fluorine compounds, trifluoroiodosilane and difluorodi-iodosilane, properties and use in preparing compounds with Si-N, Si-O, and Si-S bonds, 981.

halides and hydride halides, reactions with nitrogen oxides, 1523.

-nitrogen compounds. Part IX. Self-dehydrofluorination of tetrafluorosilane-amine adducts as a route to substituted amino-fluorosilanes, 83. Part X. Dehydrofluorination of tetrafluorosilane-amine adducts with anionic hydrides and related compounds, 2675.

-platinum bonds, stereochemistry of formation and cleavage, 2255.

Silole, 3,7-dihydro-1,1,3,3,5,5,7,7-octamethyl-1*H*,5*H*-benzo-[1,2-*c*:4,5-*c'*]bis[1,2,5]oxadi-, crystal and molecular structure, 2474.

Siloxane, hexamethylcyclotri-, vibrational spectrum, 410.

Silver. Alkyl and aryl migration from carbon monoxide to platinum promoted by silver ion, 1267.

chloride and silver bromide and their complexes, solubility in anhydrous calcium nitrate-potassium nitrate (1/1.9)-melt, 2066.

Competitive interactions in the complexing of ethylene with silver(I) salt solutions, 1241.

-(I) complexes of semicarbazide, thiosemicarbazide, and selenosemicarbazide, 1751.

-(I) salts, synthetic applications of their reaction with the bis[dicarbonyl(π -cyclopentadienyl)iron] complex, 1329.

Silyl transition-metal carbonyls and related species, photoelectron spectra, 22.

-aminodifluorophosphine and some related amines, magnetic double resonance studies, 1215.

Silyl (contd.)

- methyl and related complexes. Part I. Kinetically stable alkyls of titanium(IV), zirconium(IV), and hafnium(IV), 445.
- Single-crystal** electronic and electron spin resonance spectra of the two forms of bis(nitrato)bis(α -picoline)copper(II) and of bis(nitrato)mono(pyrazine)copper(II), 1044.
- i.r. and Raman spectra of Magnus' green salt, 1450.
- polarized electronic and e.s.r. spectra of dichlorobis(triphenylphosphine oxide)copper(II), 1644.
- Raman and i.r. spectra of vanadium(V) oxide, 291.
- i.r. reflectance spectrum of potassium tetraoxochromate(VI), and a new reflectance accessory, 1426.
- spectrum of transitions to 4G states of nickel(II) in distorted tetrahedral environments, 1920.
- Sodium** bromide, complex formed with dicyclohexyl-18-crown-6, isomer B, (perhydrodibenzo[*b,h*][1,4,7,10,13,16]hexaoxacyclo-octadecine), crystal structure, 2215.
- o*-nitrophenolato-bis(1,10-phenanthroline) complexes, crystal and molecular structures, 2347.
- oxide, reaction with the oxides VO_2 , V_2O_5 , VO , and vanadium metal, 1517.
- Solid-state** photochemical and energy-transfer processes in some hexa-amminechromium(III) salts, 368.
- reactions in the carbonylchlorobis(triphenylphosphine)-iridium(I)-hydrogen chloride system, 1802.
- Solubility** of silver chloride and silver bromide and their complexes in anhydrous calcium nitrate-potassium nitrate (1/1.9)melt, 2066.
- Solution** and single-crystal Raman study of $M(CO)_6$, where M = chromium, molybdenum, and tungsten, 2264.
- Raman spectrum and normal co-ordinate analysis of dioxygen difluoride, 1928.
- Solvates** and adducts of dihalogenotetrapyridinerhodium(III) salts. Adducts of co-ordination compounds. Part X, 2009.
- Solvation** enthalpies of some metal acetylacetonates, 2414.
- Solvent** effects on the electronic spectra of some 2,2'-bipyridyl palladium(II) and platinum(II) complexes, 132.
- extraction from halide solutions. Part VI. Complexing constants for ferric thiocyanates and the temperature dependence of their extraction, 1088.
- (-)-**Sparteine** complexes with first-row transition elements, 226.
- Specific** salt effects in the acid decomposition of decavanadate, 2481.
- Spectroscopic** and magnetic properties and crystal structure of di- μ -methoxy-bis[salicylaldehyde anthraniloyl-hydrazonato(2-)] dimanganese(III)-bismethanol, 1141.
- studies on matrix-isolated metal carbonyls. Part II. Infrared spectra and structures of $Pd(CO)_4$, $Pd(CO)_3$, $Pd(CO)_2$, and $PdCO$, 1079.
- Spin-state** equilibria, X-ray investigations on. Crystal and molecular structure of two five-co-ordinate cobalt(II) complexes with an N_4P donor set, 1383.
- Stabilities** of some bivalent metal heptane-3,5-dione complexes in aqueous dioxan (50%), 1095.
- Stability** constants and relaxation spectra of L-proline and L-hydroxyproline metal complexes, 278.
- for association between bivalent cations and some univalent anions, 1247.
- Stereochemical** non-rigidity in germylcyclopentadiene and related derivatives of germane, 2374.
- Stereochemistry** and absolute signs of $^3J(PH)$ nuclear spin coupling constants in methylplatinum(II) complexes containing tertiary phosphines, 166.
- of flexible-chelate-metal complexes. Part III. Crystal structure of dihydrogen ethylenediaminetetra-acetato-stannate(II), 741.
- of the formation and cleavage of silicon-platinum bonds, 2255.
- Stereoselective** autoxidations of dimeric vanadium(IV) tartrate complexes. Optically active co-ordination compounds. Part XXXI, 125.
- Steric** effects in the reversible oxygenation of cobalt-Schiff-base complexes. Part I. Crystal and molecular structure of the optically active and *meso*-forms of NN' -butylenebis(salicylideneiminato)cobalt(II), 419.
- Stoichiometry** and kinetics of the reaction between thallium(III) and antimony(III) ions in perchloric acid solution, 789.
- Structural** and mechanistic studies of co-ordination compounds. Part VI. Preparation, aquation, and base hydrolysis of some octahedral *trans*-chlorocyanocobalt(III) amine complexes, 1301.
- and thermochemical studies on Rb_2TeCl_6 and comparison with Rb_2SnCl_6 , 588.
- parameters and unit cell dimensions for the tetragonal actinide tetrachlorides (Th, Pa, U, and Np) and tetrabromides (Th and Pa), 686.
- studies of metal complexes with NN' -disubstituted thioureas. Part II. Crystal structure of dichlorobis(NN' -diethylthiourea)cobalt(II) (triclinic form), 876.
- on clathro-chelate complexes. Part III. Trigonal prismatic co-ordination of d^7 cobalt(II) in orthorhombic crystalline $[(FB(ONCHC_6H_5N)_3P)Co^{II+}][BF_4^-]$, MeCN and a single-crystal transformation of unsolvated monoclinic $[(FB(ONCHC_6H_5N)_3P)Co^{II+}][BF_4^-]$, 1570.
- on co-ordinated macrocyclic ligands. Part II. Crystal and molecular structure of acetylacetonato-*C-meso*-(5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane)nickel(II) perchlorate, 1408. Part III. Preparations and crystal structure analyses of salts of the nickel(II) complex *C-rac*-5,5,7,12,12,14-hexamethyl-1,4,8,11-tetra-azacyclotetradecane, $[Ni(tetb)]^{2+}$, in the α -, β -, and γ -configurations, 1963.
- Structure** and bonding in sulphatobis(thiourea)tin(II), 1810.
- and stability of carboxylate complexes. Part XII. The location of co-ordination sites in copper(II) carboxylates in solution by proton magnetic resonance, 1005. Part XIII. Crystal and molecular structure of aquobis(NN' -dimethylglycinato)copper(II) dihydrate, 2626.
- of a stable iron(0) mono-olefin chelate complex with 2-vinylphenyldiphenylphosphine: dicarbonylbis[(2-vinylphenyl)diphenylphosphine]iron(0), 2454.
- Structures** and some reactions of π -diene derivatives of octacarbonyldicobalt, 1593.
- infinitely adaptive, 1107.
- Substituted** thioureas. Part I. Study of trimethylthiourea and its complexes with zinc(II), 1399. Part II. Trimethylthiourea and its complexes with cobalt(II) and halogens, 1646.
- Substitution** reactions of the iridium(I) cation, $[Ir(CO)(CH_3CN)(PPh_3)_2]^+$, 1365.
- Sulphamato**-complexes of the platinum metals, 524.

- Sulphate ion**, reaction with protons and with bivalent metal ions, a reassessment of data for: entropy titrations, 1947.
- Sulphite ion**, reaction of, with cyanogen chloride, 917.
- Sulphoxide complexes** of actinoid tetrahalides, 2308.
- Sulphur** and selenium derivatives of an organo-iron complex, 1124.
- boron compounds. Part IV. Synthesis, reactions, and mass spectral studies of some substituted 4-methyl-1,3,2-dithiaborolans, 568.
- (vi) chlorodifluoro-oxo-, salts, preparation and identification. Evidence for chlorotrifluorosulphur(vi) oxide, 2528.
- Chlorodifluoro-oxosulphur(vi) hexafluoroarsenate(v), $\text{OSClF}_2^+ \text{AsF}_6^-$, crystal structure, 2533.
- trans*-chlorotetrafluoro(trifluoromethyl)- and its reactions with olefins and acetylenes, 2289.
- cyclohepta-, i.r. and Raman spectra, 599.
- dicyanide, reaction with thiocyanate ion, 459.
- ligands, metal complexes. Part IV. Reaction of bis-(dialkylphosphinodithioato)-platinum(II) and -palladium(II) with ligands containing Group Vb atoms, 2124.
- Trifluoro-oxosulphur(vi) hexafluoroarsenate(v), $\text{OSF}_3^+ \text{AsF}_6^-$, crystal structure, 2535.
- trioxide, helium(I) p.e. spectrum, 526.
- weak complexes, (and selenium). Part II. Complex species of SO_2 , SOCl_2 , and SO_2Cl_2 with the thiocyanate ligand, 2148.
- Sulphuric acid**, extraction by methyl diphenyl phosphate and tributyl phosphate, 1198.
- Sulphuryl chloride**, γ -irradiated, e.s.r. spectra of radicals present: the SO_2Cl_2^- radical, 9.
- Supersulphide ion**, S_4^{2-} , blue, 729.
- Surface oxidation** of uranium metal as studied by X-ray p.e. spectroscopy, 470.
- Susceptibilities**, crystalline and molecular, of triclinic crystals with application to vanadyl bisacetylacetonate, 1098.
- Symmetry-restricted covalence** in ligand field theory. Part I. The relative energies of the $^2B_{2g}$ and 2E_g states in tetra-amminecopper(II) compounds, 1853.
- Syntheses** and reactions of bromotetrafluorophenyl(cyclopentadienyl)dicarbonyliron derivatives, 553.
- properties, and some reactions of (2,2,2-triphenylphosphazene-1-yl)-cyclotriphosphaatrienes and -cyclo-tetra-phosphazetetraenes. Phosphorus-nitrogen compounds. Part XXXVII, 2740.
- and catalytic properties of some carbonyltriphenylphosphineruthenium(II) complexes, 2247.
- and fluorine-19 n.m.r. spectra of trifluoromethylthio-complexes of platinum, palladium, nickel, and iridium, 1528.
- and reactivity of some Group Vb chalcogenide cyclo-octa-1,5-diene rhodium(I) and iridium(I) complexes, 2167.
- of some phenyl-substituted stilbenediamines and their complexes with nickel(II), 1937.
- Synthetic applications** of the reaction of silver(I) salts with the bis[dicarbonyl(π -cyclopentadienyl)iron] complex, 1329.
- T**
- Tantalum(v) 2,2'-bipyridyldichloro(trimethyl)-**, crystal and molecular structure, 1830.
- chloride, reaction with dimethylzinc, some co-ordination compounds of methyltantalum(v) chloride, dimethyltantalum(v) chloride, and methylniobium(v) chloride, 961.
- monomethyl- and -niobium(v) halides and some of their complexes, preparation, 2436.
- pentachloride-phosphorus halide-alkyl halide complexes, 522.
- trimethylstannyl complexes, 1653.
- Tellurium**. Hexachloro-tellurate, -stannate, and -plumbate, n.q.r. investigation of comparative differences between, resulting from cationic effect, 357.
- shielding by heteronuclear magnetic double resonance in a representative series of compounds, 2416.
- (iv), tetraethyldithio-oxamide complexes, 1961.
- (iv), trifluoro- μ -fluoro-bis[pentafluoroantimonate(v)]. Fluoride crystal structures. Part XXI, 2150.
- Temperature dependence** of ^1H chemical shifts of aqueous sodium fluoride, sodium hydroxide, and tetramethylammonium hydroxide: the internal tetramethylammonium ion standard, 1446.
- Terbium(III)** chelates in the solid state, factors affecting the quantum efficiencies of fluorescence, 336.
- Tertiary arsine complexes** of rhodium(III) derived from hexafluorobut-2-yne and 3,3,3-trifluoropropyne. Fluoro-carbon complexes of transition metals. Part II, 2578.
- phosphine and arsine chalcogenide derivatives of Group VI metal carbonyl complexes, 2360.
- complexes, transition metal-ligand bond lengths in, correlation of these with n.m.r. coupling constants, 2095.
- Tetra-alkylammonium ions** in aqueous solution, thermodynamic properties, 1585.
- aquoethylenediaminechromium(III), reaction with oxalate, 1758.
- ethyldithio-oxamide complexes of tellurium(IV), 1961.
- kisisocyanide species, their oxidative addition reactions, and some allyl complexes. Isocyanide complexes of rhodium and iridium. Part I, 2039.
- phosphonitriles, tris- and tetrakis-dimethylaminochloro-, reactions with antimony trifluoride, 2649.
- Tetrazoles** and tetrazole complexes. Part I. Crystal structure of *cis*-bis[dimethyl(phenyl)phosphine]bis(5-methyltetrazolato)palladium(II), 371.
- Thallium**-(I) L-ascorbate, crystal structure, 2209.
- (III). Reaction between thallium(III) and antimony(III) ions in perchloric acid solution, stoichiometry and kinetics, 789.
- Theoretical and experimental study** of the e.s.r. of a number of low symmetry copper(II) dimers, 1549.
- Thermal decomposition** of diborane. Part I. The decomposition mechanism at low conversion and temperature and the inhibiting effect of accumulated hydrogen, 2090.
- of potassium permanganate and related substances. Part III. Direct evidence that $\text{K}_3(\text{MnO}_4)_2$ is not an intermediate phase in the thermal decomposition of potassium permanganate in air at ca. 200 °C, 1701.
- Thermally-induced isomerisations** of *trans*-platinum(II) and palladium(II) complexes and the chemistry of the *cis*- and *trans*-isomers. Carbene complexes. Part II, 906.
- Thermochemical and structural studies** on Rb_2TeCl_6 and comparison with Rb_2SnCl_6 , 588.

- Thermochemistry of fluorine compounds.** Part II. The hexafluoroiodate series, 2237. Part III. Iodine oxide trifluoride and iodyl fluoride, 2725.
- of oxide bronzes. Part I. Sodium vanadium bronzes $\text{Na}_x\text{V}_2\text{O}_5$ with x between 0.2 and 0.33, 30. Part II. Sodium tungsten bronzes Na_xWO_3 ($x = 0.53$ and 0.77), 1074.
- of *o*- and *p*-tolyldichloroboranes and the boron-to-carbon bond strength, 2543.
- Thermodynamic considerations in co-ordination.** Part XIII. Formation constants for the glutamate- and serinate-proton, -manganese(II), -iron(II), -cobalt(II), -nickel(II), -copper(II), and -zinc(II) systems, 1064. Part XIV. Formation constants for lead(II)-amino-acid complexes and their use in computing the complexing competition between lead(II) and *in vivo* essential metal ions, and in computer evaluation of ligands currently employed as lead(II) chelating therapeutics, 2561.
- parameters for substituted ammonium salts of the tetramethoxyborate anion, 1631.
- properties of tetra-alkylammonium ions in aqueous solution, 1585.
- Thermodynamics of bidentate ligand exchange between nickel(II) chelates.** Redistribution reactions of some transition-metal chelates. Part I, 19.
- of complex formation. Free energy, enthalpy, and entropy changes for the reactions of 4,4,9,9-tetramethyl-5,8-diazadodecane-2,11-diamine with copper(II) ions and protons in aqueous solution, 1942.
- of 1,5,8,12-tetra-azadodecane with copper(II) ions and protons in aqueous solution, 793.
- with linear aliphatic tetra-amines. Part III. Enthalpy and entropy contributions to the stability of metal complexes of 4,7-diazadecane-1,10-diamine, 1763.
- of extraction equilibria. Part II. Extraction of uranyl nitrate and chloride with trioctylphosphine oxide, 1649.
- of the actinide elements. Part IV. Heats and free energies of formation of the tetrachlorides, tetrabromides, and tetraiodides of thorium, uranium, and neptunium, 428.
- Thiocyanate ions in alkali-metal halide crystals and in aqueous glasses, e.s.r. studies of radiation effects, 3.**
- Thiocyanates and selenocyanates of bivalent manganese, cobalt, nickel, copper, and zinc, complexes with pyridine *N*-oxide and quinoline *N*-oxide, 2637.**
- Thio-ligands, dinitrosyliron complexes, 2521.**
- Thiourea and its *N*-substituted derivatives, reactions with cobalt(III) ions in aqueous perchlorate media. Metal-ion oxidations in solution. Part X, 2321.**
- Three-co-ordinated transition-metal compounds.** Part II. Electronic spectra and magnetism of tris(bis(trimethylsilylamido) derivatives of scandium, titanium, vanadium, chromium, and iron, 185. Part III. Electron spin resonance studies on tris(bis(trimethylsilylamido) derivatives of titanium, chromium, and iron, 191.
- Tin.** Alkylideneamino(trimethyl)stannanes, chemistry. Alkylideneamido-derivatives of metals and metal-iods. Part III, 151.
- caesium-halide and caesium-lead-halide, phases obtained from the frozen molten systems, 1985.
- 4-Chloropyridinium hexachlorostannate, crystal structure, 359.
- (II) compounds, Mössbauer effect. Part XIII. Data for the products from molten caesium-tin(II)-halide systems, 666.
- crystal and molecular structure of di- μ -dimethylstannylene-bis(carbonyl- π -cyclopentadienylcobalt), 1060.
- (IV) dimethyldinitrato-, crystal structure, 173.
- Dissymmetric tertiary-alkyl tin(IV) compounds, 1421.
- four-co-ordinate, compounds containing a tin-cobalt bond, Mössbauer spectra and bonding, 1694.
- Hexachloro-stannate, -tellurate, and -plumbate, n.q.r. investigation of comparative differences between, resulting from cationic effect, 357.
- organo-intermediates in the formation of mono- and dithiocarbamates, ureas, and thioureas, 98.
- reagents for the synthesis of π -allyl, π -cyclopentadienyl, π -indenyl, and other related π -enyl carbonyl derivatives of the transition metals, 1706.
- selenides, nuclear magnetic double resonance studies, 2134.
- (IV). μ -Oxalato-bis[(di-*n*-propyl sulphoxide)nitratodiphenyltin(IV)] seven co-ordination in: spectroscopic properties and X-ray crystal structure, 2257.
- (II) oximes and hydroxylamines, 940.
- (II) potassium sulphate and related tin apatites: Mössbauer and X-ray studies, 1478.
- salts, irradiated, formation of Sn^{3+} centres, and their e.s.r. parameters. Unstable intermediates. Part CXXXV, 2233.
- 119 spectra of some trichlorostannyl transition-metal complexes. Studies in Mössbauer spectroscopy. Part VI, 37.
- Stereochemistry of flexible-chelate-metal complexes. Part III. Crystal structure of dihydrogen ethylenediaminetetra-acetatostannate(II), 741.
- (II), sulphatobis(thiourea)-, structure and bonding, 1810.
- (IV), tetrachlorobis(triethylphosphine)-, crystal structure, n.m.r. and Mössbauer parameters, 1823.
- tetraphenyl-, and its isomorphs, observations on dislocations, 16.
- Titanium(III) acetic acid complexes, 209.**
- (III), chloro(π -cyclopentadienyl)-, new synthesis and isocyano-complexes of, 1954.
- diethyldithiocarbamate, spectroscopic studies. Covalent compounds of quadrivalent transition metals. Part VI, 2228.
- hexa(urea)-, salts, magnetic anisotropy and structure, 238.
- (IV) kinetically stable alkyls, 445.
- (III), kinetics of reaction with vanadium(V), 2553.
- (III), pulse radiolysis in the presence of formic acid, 1724.
- (III), tris(quinolin-8-olato)-. A distorted octahedral monomer with an orbitally non-degenerate ground state, 87.
- vanadium redox reactions in aqueous solution, kinetic studies, 537.
- Vinyltitanium trichloride, 801.
- Transition elements, first-row, complexes with (-)-spartein, 226.**
- metal π -allyl, π -cyclopentadienyl, π -indenyl, and other related π -enyl carbonyl derivatives synthesised with organotin reagents, 1706.
- carbon bonds. Part XXXII. Hexamethyl Dewar benzene; dehydrohexamethyl Dewar benzene and related complexes of platinum(II), 264. Part XXXIII. Internal metallations of secondary and tertiary carbon atoms by platinum(II) and palladium(II), 270. Part XXXIV. ^1H and ^{13}C N.m.r.

Transition (contd.)

- studies on π -allylic-palladium complexes, 2390.
Part XXXV. Internal metallation of *t*-butyl-*o*-tolylarsine and di-*t*-butyl-*o*-tolylarsine by platinum, 2394.
- carbonyl complexes containing organonitrogen ligands, X-ray photoelectron spectroscopic studies, 2143.
- carbonyl derivatives of the germanes. Part IV. Germypentacarbonylrhenium, 214.
- complexes containing phosphorus ligands. Part IX. Triaryl phosphite derivatives of palladium(II) and platinum(II) dihalides, 1148. Part X. *ortho*-Metallation reactions involving some triaryl phosphite derivatives of palladium(II) and platinum(II) dihalides, 1151.
- complexes of 1,3-dienes. Part I. Synthesis and structure of rhodium(I) complexes, 2195.
- complexes of pyrrole pigments. Part VI. Some bivalent metal complexes of 3,3',4,4'-tetrachloro-5,5'-diethoxycarbonyldipyrromethane, 1729. Part VII. Cobalt(II) and zinc(II) chelates of some tripyrrylene-*b* and bilene-*b* ligands, 1734.
- complexes of some substituted histamines, 2539.
- complexes. μ_3 -Oxotrimetal acetato-complexes of chromium, manganese, iron, cobalt, rhodium, and iridium, 2565.
- derivatives of aryl diazonium ions. Part II. Arylazo derivatives of substituted iron carbonyls, 1754.
- nitrosyl compounds. Part VIII. The preparation and properties of some cationic nitrosyl complexes of zerovalent ruthenium and osmium, 478.
- Schiff base complexes. Part VI. Mössbauer and magnetic investigations of some iron(II) and iron(III) systems, 676.
- sulphites, anhydrous. Part II. Preparation of anhydrous cobalt(II) and nickel(II) sulphates and pyrosulphates by oxidation of anhydrous cobalt(II) and nickel(II) sulphites, using the mixed non-aqueous system dimethyl sulphoxide-sulphur dioxide, 534.
- unsaturated σ -hydrocarbyl complexes, preparation and reactions, 1202.
- Trifluoroiodosilane** and difluorodi-iodosilane: their properties and use in preparing fluorosilicon derivatives with Si-N, Si-O, and Si-S bonds, 981.
- Trifluorophosphine**-metal complexes, photoelectron spectra and bonding, 2226.
- Trimethyl(pentacarbonylmanganese)-silane**, -germane, and -stannane: vibrational spectra and electron impact studies, 1269.
- silyl derivatives for the study of silicate structures. Part III. Sodium silicate hydrates, 1324.
- silylmethyl derivatives of mercury, 2029.
- thiourea and its complexes with zinc(II). Substituted thioureas. Part I, 1399.
- tin acetylides as sources of late transition-metal derivatives: metathesis, oxidative addition, and oxidative cleavage. Unsaturated σ -hydrocarbyl transition-metal complexes. Part I, 1202.
- Triphenylbismuthine** and tris(*p*-chlorophenyl)bismuthine, conformation in benzene solution, 1101.
- Triple resonance**, heteronuclear magnetic, in the study of organophosphorus selenides, 2162.
- Tris(quinolin-8-olato)titanium(III)**. A distorted octahedral monomer with an orbitally non-degenerate ground state, 87.

(trimethylsilylmethyl)phosphine carbonyl complexes of iron, cobalt, and nickel, 867.

- Tritium** exchange reactions on irradiated silica gel. Part I. Activation of molecular tritium and application to the tritium labelling of aliphatic hydrocarbons, 1145.
- Tungstate** anions, rapid acidification of their solutions, 224.
- Tungsten** and molybdenum carbonyl derivatives, ^{18}C n.m.r. spectra of, 1027.
- thiolates, 1311.
- bronzes, sodium, Na_2WO_3 ($x = 0.53$ and 0.77), thermochemistry, 1074.
- carbonyls, carbene and Lewis base complexes, 1743.
- complexes, carbon-13 n.m.r. spectra, 2012.
- cationic carbonylnitrosyl complexes, 2183.
- chlorides, oxidation and reduction by chlorinated alkyl cyanides, 1871.
- Crystal structure of dicaesium octa- μ_3 -chloro-hexachloro-octahydro-hexatungstate(II), 646.
- (II), dicarbonylchloro(π -cyclopentadienyl)-, phosphorus-(III) complexes, photochemistry, 1899.
- (VI), diethylamido- and pentafluorophenoxo- fluorides, 1876.
- hexacarbonyl, solution and single-crystal Raman study, 2264.
- hexachloride-phosphorus halide-alkyl halide complexes, 522.
- hexamethyl-, preparation and properties, 872.
- Metal perfluoro-alkyl- and -aryl-thiolates. Part II, 1957.
- [octakisdimethylaminocyclotetraphosphazene]tetracarbonyl-, crystal and molecular structure, 2708.
- (IV) trimethylstannyl complexes, 1653.

U

- Unsaturated σ -hydrocarbyl transition-metal complexes**. Part I. Trimethyltin acetylides as sources of late transition-metal derivatives: metathesis, oxidative addition, and oxidative cleavage, 1202.
- Unstable intermediates**. Part CXIX. E.s.r. studies of radiation effects upon cyanate and thiocyanate ions in alkali-metal halide crystals and in aqueous glasses, 3. Part CXXIII. E.s.r. spectra of radicals in γ -irradiated sulphuryl chloride: the SO_2Cl_2^- radical, 9. Part CXXXI. An e.s.r. study of a range of radicals in irradiated phenylphosphonic dichloride and phenylphosphonothionic dichloride, 1494. Part CXXXV. The formation of Sn^{3+} and Pb^{3+} centres in irradiated tin and lead salts, and their e.s.r. parameters, 2233. Part CXXXVI. A survey of the magnetic properties of $\cdot\text{PL}_3$ and $\cdot\text{PL}_4$ radicals: the radicals $\cdot\text{P}(\text{OH})_3^+$, $\cdot\text{As}(\text{OH})_4$, and $(\text{MeO})_3\dot{\text{P}}\text{O}^-$, 2509.
- Uranium(VI) bis(ethyl carbamate)dinitratodioxo-**, preparation, properties, and crystal structure, 451.
- [N^{N} -ethylenebis(salicylideneiminato)](methanol)dioxo-, crystal and molecular structure, 2331.
- (IV) ions, kinetics of oxidation by halogens in aqueous solution. Part I. Iodine and bromine, 134. Part II. Chlorine, 138.
- metal, surface oxidation as studied by X-ray p.e. spectroscopy, 470.
- Preparation and i.r. spectroscopic characterisation of some (oxydiacetato)uranyl(VI) complexes, 1308.
- (III), stability in aqueous solution and in organic solvents, some chemical and physical properties of hydrated

- uranium(III) fluoride and the anhydrous chloride, bromide, and iodide, 604.
- tetrahalides and uranyl chloride, amide complexes, 2682.
- Uranyl** chloride and uranium tetrahalides, amide complexes, 2682.
- nitrate and chloride, extraction with trioctylphosphine oxide, thermodynamics, 1649.
- (vi) nitrate hexahydrate, isothermal dehydration above room temperature, 1115.
- oxalate complexes. Preparation and crystal and molecular structure of ammonium uranyl trioxalate (Part I); dioxalate (Part II); Part III, ammonium diuranyl trioxalate, 1610, 1614, 1616.

V

- Valencies** and bond indices for the elements from hydrogen to chlorine, 2273.
- Valency** and bond indices, 838.
- Vanadates**, NaVO_3 , $\text{Na}_4\text{V}_2\text{O}_7$, and Na_3VO_4 , preparation and X-ray powder diffraction patterns, 1513.
- Vanadium**(III) acetic acid complexes, 209.
- (iv), bis-(π -cyclopentadienyl)-, $(\pi\text{-C}_5\text{H}_5)_2\text{VX}_2$, e.p.r. spectrum, 722.
- chlorides, oxidation and reduction by chlorinated alkyl cyanides, 1871.
- diethyldithiocarbamate, spectroscopic studies. Covalent compounds of quadrivalent transition metals. Part VI, 2228.
- Hydrolysis of the oxovanadium(IV) ion and the stability of its complexes with the 1,2-dihydroxybenzenato-(2-) ion, 1156.
- (v), kinetics of the reaction with titanium(III), 2553.
- Magnetic properties of some *N*-(2-hydroxyphenyl)-2-hydroxy-1-naphthylmethyleneiminato-complexes of the oxovanadium(IV) ion, 1703.
- metal and the oxides VO_2 , V_2O_5 , and VO , reaction with sodium oxide, 1517.
- mixed valence complexes with 1,10-phenanthroline and 2,2'-bipyridine, 1182.
- (v) oxide tribromide, reactions: preparation and properties of complex oxobromovanadates(IV), 2747.
- preparation and properties of vanadium(IV) oxide dibromide complexes, 2751.
- oxides, reaction with liquid sodium, 1520.
- reactions with liquid potassium, 2618.
- reactions with potassium monoxide, 2614.
- Oxidiperoxovanadate(v) complexes with bidentate ligands, 1137.
- (II) reductions of halogenopenta-amminecobalt(III) complexes, assignment of inner- and outer-sphere mechanisms, 2730.
- Sodium vanadium bronzes $\text{Na}_x\text{V}_2\text{O}_5$ with x between 0.2 and 0.33, thermochemistry, 30.
- (iv) tartrate complexes, dimeric, stereoselective autoxidations. Optically active co-ordination compounds. Part XXXI, 125.
- titanium redox reactions in aqueous solution, kinetic studies, 537.
- (v), tris(*NN*-diethyldithiocarbamate)oxo-, crystal structure, 2082.
- Vanadyl** bisacetylacetonate, crystalline and molecular susceptibilities of triclinic crystals, 1098.

- Vapours**, transition-metal, chemistry. Part III. Formation of complexes with arenes, trifluorophosphine, and nitric oxide, 120.
- Vibrational** spectra and metal-metal bonding in the hexahalogenodigallate(II) ions, $\text{Ga}_2\text{X}_6^{2-}$ ($\text{X} = \text{Cl}, \text{Br}, \text{and I}$), 988.
- spectra of fluorocarbon-Group V derivatives. Part II. The compounds CF_3PX_2 where $\text{X} = \text{halogen or hydrogen}$, 1691. Part III. The compounds $(\text{CF}_3)_2\text{PX}$ where $\text{X} = \text{halogen or hydrogen}$, 2754.
- of hexamethylcyclotrisiloxane and hexamethylcyclotrisilazane, 410.
- of some chloro- and methylchloro-species of cadmium, indium, tin, antimony, tellurium, and iodine, 465.
- of some octahedral trimethylphosphine complexes of rhodium and iridium, 1489.
- of zirconium tetrahydroborate and related molecules, 162.
- preparation, and properties of complexes containing the AuCl_2^- , AuBr_2^- , and AuI_2^- ions, 1845.
- Vinyl** rearrangement and halogen exchange, Lewis acid-promoted, of platinum-fluoro-olefin complexes, 2069.
- titanium trichloride, 801.
- Visible** spectra of some five-co-ordinate nickel(II) complexes containing tris(*o*-dimethylarsinophenyl)stibine. Trigonal bipyramidal and square pyramidal complexes. Co-ordination complexes containing multidentate ligands. Part III, 1945.
- Vitamin B₁₂** model complex, interactions with amino-acids and oligopeptides. A visible and n.m.r. spectroscopic study, 317.
- Voltammetric** oxidation of arene, cycloheptatriene, and cycloheptatrienyl tricarbonyl complexes of chromium, 1768.
- properties and characterisation of bis(tertiary phosphine)-tris(isonitrile)cobalt(I) complexes, 1747.

W

- Water** shifts in electrolyte solutions, contribution of proton chemical shifts of water in cationic hydration complexes, 42.
- Weak** complexes of sulphur and selenium. Part II. Complex species of SO_2 , SOCl_2 , and SO_2Cl_2 with the thiocyanate ligand, 2148.
- 'Weak-field' ligand-field calculation for tetragonally distorted d^2 and d^8 systems, 287.

X

- X-Ray** crystal structure analysis, n.m.r. and Mössbauer parameters of *trans*-tetrachlorobis(triethylphosphine)tin(IV), 1823.
- of bis(adeninium) *trans*-bis(adenine)tetra-aquocobalt(II) bis(sulphate) hexahydrate: a complex of unidentate adenine containing adenine-adeninium hydrogen-bonded pairs, 1596.
- of bis(dimethyl phosphonato)mercury(II), 560.
- investigations on spin-state equilibria. Crystal and molecular structure of two five-co-ordinate cobalt(II) complexes with an N_4P donor set, 1383.
- molecular structure of *cyclo*-bis(μ -acetato- μ -nitrosyl)-bis-[di- μ -acetato-di-platinum(II)]; a tetranuclear com-

X-Ray (contd.)

- plex containing both nitrosyl and acetate bridges, 1194.
- photoelectron and Mössbauer spectroscopy of triphenylphosphine-iridium complexes, 1828.
- photoelectron spectra of compounds containing rhodium-halogen bonds and of rhodium(II) acetate and its derivatives: rhodium 3d and halogen *np* binding energies, 116.
- spectra of lanthanide pyridine-2,6-dicarboxylates, 200.
- spectroscopic studies of some transition-metal carbonyl complexes containing organonitrogen ligands, 2143.
- spectroscopy of chromium-oxygen systems, 1675.
- spectroscopy of mononuclear and dinuclear complex halides of rhenium(III) and rhenium(IV), and of the $\text{Re}(\text{NCS})_6^{3-}$ and $\text{Re}_2(\text{NCS})_6^{2-}$ complex anions, 1039.
- of some dimethylamino-substituted cyclotriphosphazenes, 1042.
- spectroscopy, rhodium 3d binding energies. Studies on metal carboxylates. Part IV. Pyridine-2,6-dicarboxylate complexes of cobalt(II), nickel(II), rhodium(II), and rhodium(III). Synthesis, spectral and magnetic properties, 1035.
- spectroscopy study of surface oxidation of uranium metal, 470.
- powder diffraction patterns of the sodium vanadates NaVO_3 , $\text{Na}_4\text{V}_3\text{O}_{13}$, and Na_3VO_4 , 1513.
- structural evidence for the influence of geometrical dis-

tortion on the spin-state of five-co-ordinate cobalt(II) and nickel(II) complexes, 641.

structure determination of a new metal cluster complex: di- μ_3 -arsino-tris(tricarbonyliron)(3Fe-Fe), 307.

studies of potassium tin(II) sulphate and related tin apatites, 1478.

Z

- Zinc**, alkyl-, compounds. Part I. Crystal structure of ethylzinc iodide, 64.
- (II) complexes of some tripyrrene-*b* and bilene-*b* ligands, 1734.
- Crystal and molecular structure of μ -oxalato-bis[di(3-aminopropyl)aminezinc(II)] diperchlorate, 1537.
- pentafluorophenyl-, halides, ^{19}F n.m.r. spectra, 978.
- (II), trimethylthiourea complexes, 1399.
- Zirconium** diethyldithiocarbamate, spectroscopic studies. Covalent compounds of quadrivalent transition metals. Part VI, 2228.
- (IV) kinetically stable alkyls, 445.
- tetrahydroborate and related molecules, vibrational spectra, 162.
- Zwitterionic** complexes of cobalt(II), 328.

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Rapid publication is aided by careful preparation of text and illustrations and strict adherence to the format and conventions of individual Transactions; detailed Instructions to Authors are available on request from the Editor.

Particular attention is drawn to the use of (i) SI units and associated conventions, (ii) I.U.P.A.C. nomenclature for compounds, and (iii) standard methods of literature citation.

Administration

Receipt of a contribution for consideration will be acknowledged immediately by the Editorial Office. The acknowledgement will indicate the paper reference number assigned to the contribution. Authors are particularly asked to quote it on all subsequent correspondence.

* Attention is drawn to the following extract from the Society's Bye-Laws:

85. (i) Every Fellow who, with a view to its publication by the Society, submits a paper or other communication shall by so doing undertake:

(a) that his communication has not been published and that he will not permit its publication before it is accepted or declined by the Society, and

(b) that if it is accepted for publication the Society shall thereupon become entitled to the copyright therein and that he will, when called on to do so, assign, insofar as he is permitted to do so, to the Society the said copyright, including the sole right to print and publish in any form, in any language, and in any part of the world, the whole or any part of his communication. The Council shall not refuse any reasonable request from any author to reproduce his own work elsewhere in whole or in part.

The attention of every Fellow who submits a paper or other communication for publication shall be drawn to this Bye-Law.

(ii) Any person other than a Fellow who submits any paper or other communication with a view to its publication shall be required to sign an undertaking in the terms set out above.



Presentation of Papers

Every latitude, consistent with brevity, in the form and style of papers is permitted, and no pattern for either is prescribed. Certain elements are, however, common to all papers, and these are considered.

Organization of Material

Title.—The choice of a title for a paper is of the greatest importance, since it is from the title that the important key-words used in information retrieval are taken. Not only should the title clearly and accurately indicate the content of that paper but also it should be as specific as the content and emphasis of the work permits. Brevity in a title, though desirable, should be balanced against its accuracy and usefulness.

Abbreviations, symbols, and formulae are generally not permitted, and it is usual to spell out terms where necessary.

Reference to the preceding part of a series must be made as the reference (numbered 1) to the title in the form: 'The Chemistry of Vitamin B₁₂. Part VIII.¹ Controlled Potential Reduction of Vitamin B_{12a}.' [Reference to a preceding part in the references is in the form: Part VII, H. A. O. Hill, B. E. Mann, J. M. Pratt, and R. J. P. Williams, *J. Chem. Soc. (A)*, 1968, 564. If the page number is unknown because the paper has still to be accepted, or is in the press, the paper number should be given.]

Summary.—Every paper for the *Journal* must be accompanied by a summary (50–250 words) setting out briefly and clearly the objects and results of the work. The summary should give a reader a clear idea of what the work has achieved and should be *independent* of the main text. This last point is of particular importance in connection with the names of compounds which, although they may be accompanied by a number which refers to a displayed formula in the body of the text, must be comprehensible without reference to this formula. Thus,

Apetalactone, a new triterpene lactone isolated from *Calophyllum apetalum* Willd. has been shown to be 4,28-dihydroxy-3,4-secofriedelan-3-oic acid lactone (IIa).

or

Reaction of sodium hydride with ω -hydroxyalkyltriphenylphosphonium salts $\text{Ph}_3\text{P}^+[\text{CH}_2]_n\text{OH X}^-$ (I) has been investigated. The salt (I; $n = 1$, $\text{X} = 1$) gave triphenylphosphine and formaldehyde. The salt (I; $n = 2$, $\text{X} = 1$) gave triphenylphosphine oxide and ethylene. Similar reactions were carried out with ω -hydroxyalkyltriphenylarsonium (XIV) and ω -hydroxyalkyldimethylphenylammonium (XV) salts.

The summary should concern only the main subject of the work and its main conclusions; details of an involved argument or synthesis should not be included and, although classes of compounds prepared or discussed should be given rather than a list of compounds, key compounds in the work should be referred to.

Introduction.—This should give clearly and briefly, with relevant references, both the nature of the problem under investigation and its background.

Results and Discussion.—It is usual for the results to be presented first, and for them to be followed by a

discussion of their significance. Only relevant results should be presented, and figures, tables, and equations should be used only for purposes of clarity and brevity. Data must not be reproduced in more than one form, e.g. in both figures and tables.

Experimental Section.—Descriptions of experiments should be given in detail sufficient to enable experienced experimental workers to repeat them; the degree of purity of materials should be given, as should the relative quantities used. Descriptions of established procedures are unnecessary. Standard techniques and methods used throughout the work should be stated at the beginning of the section. Apparatus should be described only if it is non-standard; commercially available instruments are referred to by their stock numbers (e.g. Perkin-Elmer 137 or Unicam SP 500 spectrophotometers). The accuracy of primary measurements should be stated. Unexpected hazards encountered during the experimental work should be noted. The detailed treatment of the Experimental section is dealt with in a forthcoming Notice to Authors.

Acknowledgements.—Contributors, other than co-authors, are acknowledged in a separate paragraph at the end of the paper; acknowledgements should be as brief as possible. Titles, Mr., Mrs., Miss, Dr., Professor, etc., are given; degrees are not given. Organizations which operate on a commercial basis are not acknowledged.

Bibliographic References.—These are given on a separate sheet at the end of the manuscript and are referred to in the text by superior roman numerals. They must be distinguished from footnotes which are given at the bottom of the page to which they refer; they are referred to by an asterisk (*), dagger (†), etc. Bibliographic references and footnotes are the subject of Notice No. 3.

General Detail

Type Size.—It should be noted that since the Experimental section and the results are printed in smaller type than the theoretical part, division between the two should be clear-cut and frequent alternation is not advisable.

Brevity.—Because of the large volume of work submitted for publication, brevity in the presentation of papers is essential and, for this reason, certain tendencies are discouraged; these are as follows:

- Unnecessary division of work into separate parts of a series. Papers are in no way discouraged solely on grounds of length.
- Submission of fragmentary work when this can be included in a larger communication.
- Historical introductory paragraphs in cases when a simple statement of the accepted present position suffices.
- Undue elaboration of hypotheses.
- Over-detailed and verbose exposition of ideas.
- Excessive use of diagrams, for example, straight-line plots that can be adequately expressed as an equation together with, if necessary, a table of deviations.
- Duplication of data as between text, tables, and figures, etc.

- (h) Details of the preparation of simple derivatives such as esters, ethers, semicarbazones, etc., and slight variations of essentially the same technique. (Unless the conditions are critical, quantities are superfluous, and only an indication of reagents and/or conditions is required.)

Spelling.—Standard English spelling is used (*Oxford English Dictionary*), although latitude with respect to alternative spellings for certain words is allowed. Where one form or the other of a particular spelling is adopted it should be used consistently throughout a paper.

Punctuation.—Although punctuation follows standard English practice, the following conventions are observed:

- (a) A comma is placed before 'and' or 'or' in a series such as 'oxygen, sulphur, and selenium' or ' λ_{max} 237, 295, and 343 nm.'
- (b) Parentheses, square brackets, and braces are used, as necessary, in that order, i.e. {{()}}.
- (c) When a word is followed by a punctuation mark the parenthetical phrase must be inserted before the latter, e.g. 'm.p. 234° (decomp.)' and not 'm.p. 234° (decomp).'
- (d) A colon is used to separate a ratio, as in 1 : 20—not a solidus 1/20.
- (e) Parenthetical expressions of the same physical quantity in different units are separated by a comma (3.9 g, 0.1 mol) (30 ml, 1 mol); expressions of different physical quantities are separated by a semicolon (2.9N; 30 ml) (d 0.88; 8 ml).

Hyphenation.—Hyphens are used for two purposes: to divide and to compound.

Division. It is common practice to divide words, particularly when in a sequence, when one part is common to several of the words; in such cases, the hyphen, representing the point of attachment to the common part, is always inserted, e.g. 'the chloro-, bromo-, and fluoro-naphthalenes,' 'the *o*-, *m*-, or *p*-nitrotoluenes,' or 'the oxo-naphthalenes and -naphthalenes.' It is not good practice, however, to detach both a common prefix and a common suffix in a series, e.g. 'the dihydroxy- naphthalene- and phenanthrene-diones,' since confusion can arise.

'Sections' of class names such as diazo-ketone, alkyl-diamine, epoxy-nitro-sulphone, etc., are linked by hyphens.

It is also Society usage to insert a hyphen after a prefix which ends in a vowel or y; the hydroxy-group, the aza-function, the carboxy-compounds, the nitro-derivatives, but the methyl group (note that hydroxy, acetoxy, carboxy, ethoxy, and methoxy are used and not hydroxyl, acetoxyl, carboxyl, ethoxyl, and methoxyl).

It is customary to separate a pair of the same letter when these letters (in the same fount) would not naturally fall together, e.g. butyl-lithium, iodo-octane.

Compounding. A hyphen is often necessary when words are compounded to form a single modifying adjective to precede the noun being modified, thus: 'a melting-point determination' or 'a free-radical chain mechanism.' A hyphen is not needed when adverbs are compounded, as in 'an electrically heated oven,' or for two-word chemical names such as 'nitric acid solution.'

Miscellaneous uses of hyphens. Hyphens are used to set apart numbers, configurational letters, Greek

letters, and italicized prefixes: 1,2,5-trimethylcyclohexane, D-glucosyl-hexose, s-trinitrobenzene, β -chlorophenethylbenzene, tri- μ -carbonyl-bis(tricarbonyliron), and 3-methylpent-*trans*-2-ene.

Use of Italics.—As described below, italics are indicated in a typescript by single underlining. Particular attention should be paid to the following uses.

(a) Foreign words and phrases and Latin abbreviations are given in italics: e.g., *in toto*, *in vivo*, *ca.*, *cf.*, *i.e.*, etc.

(b) In the names of chemical compounds or radicals italics are used for prefixes (other than numerals or symbols) when they define the position of named substituents, or when they define stereoisomers: other prefixes are printed in roman. (Note: Initial capital letters are not to be used with italic prefixes or single-letter prefixes: full points are not to be associated with letter prefixes.)

o-, *m*-, and *p*-nitrotoluenes, but *ortho*-, *meta*-, and *para*-compounds (*o*-, *m*-, and *p*- are used only with specific names; *ortho*-, *meta*-, and *para*- are used with classes), s-trinitrobenzene, NN-dimethylaniline, *trans*- and *cis*-hexane-1,2-diol, *gem*- and *vic*-diols, benzil *anti*-oxime, 3-O-methyl-L-glycero-tetrolulose.

At the beginning of a sentence the first roman letter after the prefix is capitalized: 'D-glycero-D-glucosyl-Heptose was subjected . . . ' and ' β -D-Tolylchalcone gave . . . '

(c) The scientific names of genera, species, and varieties are italicized.

(d) In references to periodicals their names or abbreviations are set in italics.

Note: Greek letters are not italicized, and should not therefore be underlined in typescripts.

Headings.—(a) Main sections (Experimental, Discussion, etc.): side-heading, small capitals, no final fullstop.

(b) Main side-heading: italics, initial capital letter for each noun and adjective, final fullstop and dash.

(c) Subsidiary side-heading: italics, first initial capital only, final fullstop but no dash.

(d) Further subdivision: by italic (a), (b), etc. (no following fullstop), and finally (i), (ii), etc. If (a), (b), etc. are used in front of a subsidiary side-heading, then for contrast these letters are not italicized.

Letters and prefixes which are ordinarily printed in italics are transferred for contrast into roman type in italicized phrases (see example below, where O-alkyl becomes O-alkyl).

Physicochemical symbols, however, remain in their prescribed form, and numerals and Greek letters are not italicized.

Examples:

EXPERIMENTAL

Preparation of Aliphatic Aldoximes and Ketoximes.
—Acetoxime O-alkyl ethers. (a) Acetoxime (100 g) was dissolved . . .

Density (d) of the Alcohol at 295 K.—The series of aliphatic alcohols . . .

Note: In the above examples it should be noted that the type of print required to indicate italics, capitals, small capitals, etc. is shown by underlining; this convention must be strictly adhered to, i.e.

Single underlining for *italic* type

Double underlining for SMALL CAPITALS

Treble underlining for ORDINARY CAPITALS

Wavy underlining for bold black type

NOTICES TO AUTHORS—No. 3/1968

Bibliographic References and Footnotes

A clear distinction is made between bibliographic references and footnotes. The latter are used to present material which, if included in the body of the text, would disrupt the flow of the argument but which is, nevertheless, of importance in qualifying or amplifying the textual material. Such footnotes are referred to with the following symbols: *, †, ‡, §, ¶, ||, etc. [Note: Since an asterisk is used to indicate the author to whom correspondence should be addressed, its use early on in a paper is not advised; a dagger (†) is preferred.]

Bibliographic References.—Reference to the source of statements in the text is made by use of *superior numerals* at the appropriate place. The references themselves are given as footnotes at the bottom of the corresponding page in the final printed text. It is thus *essential* that bibliographic references are numbered in the order in which they will appear.

When citation of a paper is repeated the numeral previously given to that reference is to be used also at the second citation; the footnote is not repeated.

The position of the superior numeral should be chosen with care, particularly when it does not follow an author's name. If placed adjacent to punctuation, the numeral should normally be placed after the punctuation mark, *e.g.* 'This compound was shown to be the dienone,³ which . . .'. It may be necessary to modify this rule, however, to avoid confusion, thus: 'In this way the method was found to be suitable for lead², tin³, bismuth⁴, and mercury⁵.'

Particular care is necessary where a reference number is likely to be confused with a superscript numeral indicating a power index: '... which gave a value of 2.3 cm³...' should be written as '... which gave a value³ of 2.3 cm' or '... which gave a value of 2.3 cm (ref. 3)'.

Since it is usually difficult to print a table in a given position in the text, references within the table are best dealt with by taking the individual references into the printed footnotes to the tables and using a new reference number sequence therein. Should the references cited in the tables appear much earlier in the text, these earlier reference numbers may be used.

Journals. Journal titles must be abbreviated to the forms listed in Notice 4 of this series. The main principles which underlie these abbreviations are: (i) clarity to a chemist; (ii) a fullstop after each abbreviated word, but not after words in full; (iii) English and Latin adjectives have initial capital letters, other adjectives do not.

Books. Titles of books are cited in quotation marks, in upright letters, and the author(s), title, publisher, town, date (or edition, if more than one has

been published), and page number (if required) must be given in that order:

C. J. M. Stirling, 'Radicals in Organic Chemistry,' Oldbourne Press, London, 1965, p. 69.

T. J. Suen, in 'Polymer Processes,' ed. C. E. Schildknecht, Interscience, New York, 1956, vol. X, p. 295.

Patents. Patents should be indicated in the form: B.P. 367,450, 367,455-7. U.S.P. 1,171,230. G.P. 436,112-4. Jap.P. 20,101. Dates are indicated thus: B.P. 666,776/1956. Patents which are applied for must always be given a year, *e.g.* B.P. Appl. 102/1968.

Reports and Bulletins, etc.

R. A. Allen, D. B. Smith, and J. E. Hiscott, 'Radioisotope Data,' UKAEA Research Group Report AERE-R 2938, H.M.S.O., London, 1961.

'Collected Papers on Methods of Analysis for Uranium and Thorium,' Geological Survey Bulletin 1006, U.S. Government Printing Office, Washington D.C., 1954.

Material presented at meetings.

N. N. Greenwood, Abstracts, Anniversary Meeting of the Chemical Society, Glasgow, 1965, C1.

N. S. Anderson and D. A. Rees, in 'Proceedings of the Vth International Seaweed Symposium,' ed. E. G. Young and J. L. McLachlan, Pergamon Press, Oxford, 1966, p. 405.

Theses.

A. D. Mount, Ph.D. Thesis, University of London, 1967.

Reference to unpublished material. For material presented at a meeting, congress, or before a society, *etc.*, but not published, the following form is used:

¹ A. R. Jones, presented in part at the XXth Congress of the International Union of Chemistry, Paris, September, 1960.

For material accepted for publication, but not yet published, the following form is used:

² A. R. Jones, *J. Amer. Chem. Soc.*, in the press.

If the paper has been submitted to the Society, the paper number should be given:

³ A. R. Jones, *J. Chem. Soc. (A)*, in the press (8/556).

For material submitted for publication but not yet accepted the following form is used:

⁴ A. R. Jones, submitted for publication in *Angew. Chem.*

For personal communications the following form is used:

⁵ G. B. Ball, personal communication. (Note: the form, G. B. Ball, private communication, is inappropriate.)

If material is to be published but has yet to be submitted the following form is used:

⁶ Unpublished data.

Names.—The names and initials of all authors are always given in the reference footnote; they must not be replaced by the phrase *et al.* This does not prevent some, or all, of the names being mentioned at their first citation in the cursive text: initials are not necessary in the text.

For Chinese and Spanish authors all names should be given as in the original, since the patronymic is not always given last in these languages. If co-authors are to be collectively cited, as in 'Smith and his co-workers' or 'Smith *et al.*,' the latter form is inappropriate unless the individual name 'Smith' appears first among the authors named in the original.

Composite References.—Whenever possible, composite references should be used rather than a series of individual references. The style for composite references is as follows:

¹ A. B. Jones, *J. Chem. Soc. (A)*, 1967, 234.

² A. B. Jones, *J. Chem. Soc. (A)*, 1966, 123; 1967, 234.

³ A. B. Jones, *J. Chem. Soc. (A)*, 1966, 123; *J. Amer. Chem. Soc.*, 1956, 78, 1234.

⁴ A. B. Jones, *J. Chem. Soc.*, 1956, 234; A. B. Jones and C. D. Brown, *J. Chem. Soc. (B)*, 1967, 234, 1077; 1968, 599.

⁵ A. B. Jones, *J. Amer. Chem. Soc.*, 1956, 78, 1234; A. B. Jones and C. D. Brown, *ibid.*, 1957, 79, 567; A. B. Jones and E. F. Green, *ibid.*, p. 999.

If only one paper from a composite reference is required for citation later, then two numbers may be assigned to the first citation (e.g. Jones^{1,2}); alternatively, long composite references may be divided by letters, e.g.:

(a) A. B. Jones, *J. Chem. Soc. (A)*, 1954, 467;

(b) A. B. Jones and C. D. Brown, *J. Chem. Soc. (B)*, 1967, 234.

A. B. Jones, *J. Chem. Soc. (A)*, (a) 1953, 267;

(b) 1954, 1742; (c) *etc.*

A composite reference may cite a previous reference in the form:

¹² A. B. Jones, *J. Chem. Soc.*, 1956, 234; C. D. Brown, *ref. 5*.

(Note: *ibid.* is used only within a given reference and not to refer from one reference number to another: the abbreviated title for the journal should be repeated for separate reference numbers.)

Idem, loc. cit., and *op. cit.* are not used in references.

Abbreviations of Journal Titles.—Abbreviations for journal titles are constructed on the following general principles:

(a) When the full title consists of a single word it is not abbreviated: *Nature*, *Experientia*, *Tetrahedron*.

(b) In other cases the title or words selected from it are abbreviated as far as is consistent with the general principles:

(i) The abbreviated title should still enable the reader or librarian to identify the journal with ease; it should be readily expandable into the original or into full words near to the original. Accordingly, many words are unsuitable for abbreviation: *Acta*, *Bergvesen*, *Brewing*, *Cercetari*, *Dansk*, *Finishing*, *Folyoirat*, *Food*, *Istanbul*, *Sinica*.

(ii) The same word, if abbreviated, is always abbreviated in the same way, irrespective of the full title of the journal in which the word appears.

(iii) Nouns and adjectives derived directly from them receive the same abbreviation; initial capital letters are used for nouns, and small (lower case) initial letters for adjectives (unless they form the first word of the abbreviated title), except that for English and Latin titles adjectives are also given initial capital letters. Examples: *Chemie Chem.*, *chemische(n) chem.*, *Chemistry or chemical Chem.*, *Chimie Chim.*, *chimique chim.*, *Chimie or chimica Chim.*, *Belgique Belg.*, *belges belg.*

(iv) Related words not strictly covered by clause (iii) are differentiated. Examples: *Chemistry* and *chemical Chem.*, but *Chemists* in full; *Engineering* (adjective and noun) *Eng.*, but *Engineers* in full.

(v) Special sources of possible confusion require special treatment. Examples: *Ind.* for *Industry* and *industrial*, but *India(n)* in full; *Anal.* for *Analele*, *Analyt.* for *Analytical*, *Ann.* for *Annals*, *Annales*, *Annalen*, *Annali*, or *Annual*, but the full words for *Anales*, *Analyst*, and *Annuaire*.

(c) 'The', 'a', 'of', and 'and', as well as their equivalents in other languages, are omitted, except for rare cases where they seem essential for clarity, as in *Chem. and Ind.* (*Chemistry and Industry*, not *Chemical Industry* or *Industrial Chemistry*).

(d) All abbreviations are followed by a fullstop (full point); full words in references do not require to be followed by a fullstop.

(e) Names of countries are added, without punctuation, when they form part of the full title, as in *J. Chem. Soc. Japan* (*Journal of the Chemical Society of Japan*) or *Bull. Soc. chim. France* (*Bulletin de la Societe chimique de France*; the 'France' may not be omitted here as the list contains two other *Bull. Soc. chim.* as well as *Bull. Soc. Chim. biol.*). The country of origin is added in parentheses when needed to avoid confusion, as in *Ann. Chim. (France)* (*Annales de Chimie*) and *Ann. Chim. (Italy)* (*Annali di Chimica*), and for some titles of Japanese and translations from Russian journals, as in *Pharm. Bull. (Japan)* and *J. Gen. Chem. (U.S.S.R.)*.

(f) The following long-established extreme abbreviations are retained: *Ber.* (since 1945 this journal has been superseded by *Chem. Ber.*); *Compt. rend.*; *Gazzetta*; *Annalen*.

NOTICES TO AUTHORS—No. 4/1968

List of Abbreviations for Periodicals most commonly found in Chemical Papers

The following list is compiled from those journals which are received in the Chemical Society Library. Since journal titles and their abbreviations are printed in *italics*, they must be underlined in the manuscript.

- Accounts Chem. Res.*
Acta Acad. Aboensis, Math. Phys.
Acta Biochim. Biophys. Acad. Sci. Hung.
Acta Biochim. Polon.
Acta Chim. Acad. Sci. Hung.
Acta Cryst.
Acta Metallurgica
Acta Phys. Acad. Sci. Hung.
Acta Phys. et Chem. Szeged.
Acta Polytech. Scand. (Chem.)
Acta Vitaminol.
Adv. Alicyclic Chem.
Adv. Anal. Chem. Instrum.
Adv. Appl. Microbiol.
Adv. Carbohydrate Chem.
Adv. Catalysis
Adv. Chem. Eng.
Adv. Chem. Phys.
Adv. Clin. Chem.
Adv. Colloid Interface Sci.
Adv. Enzymol.
Adv. Fluorine Chem.
Adv. Food Res.
Adv. Free-Radical Chem.
Adv. Heterocyclic Chem.
Adv. Inorg. Chem. Radiochem.
Adv. Lipid Res.
Adv. Macromol. Chem.
Adv. Magn. Resonance
Adv. Org. Chem.
Adv. Organometallic Chem.
Adv. Pest Control Res.
Adv. Petrol. Chem.
Adv. Photochem.
Adv. Phys.
Adv. Phys. Org. Chem.
Adv. Protein Chem.
Adv. Quantum Chem.
Adv. Struct. Res. Diffraction Methods
Advancement Sci.
Africad
Agric. and Biol. Chem. (Japan)
Agric. Chem.
Agrokém. és Talajtan
Allg. prakt. Chem.
Ambois
Amer. Ceram. Soc. Bull.
Amer. Dyestuff Reporter
Amer. Inst. Chem. Engineers J.
Amer. J. Pharm.
Amer. J. Sci.
Amer. Perfumer
Anais Acad. brasil. Cienc.
Anais Assoc. brasil. Quim.
Anal. Stit., Univ. "Al. I. Cuza" Iasi.
Sci. Ic
Anales Asoc. quim. argentina
Anales Bromatol.
Anales de Quim.
Analyst
Analyst, Biochem.
Analyst, Chem.
Analyst, Chim. Acta
Analyst, Letters
Angew. Chem.
Angew. Chem. Internat. Edn.
Angew. makromol. Chem.
Ann. Acad. Sci. Fennicae
Ann. Chim. (France)
Ann. Chim. (Italy)
Ann. Endocrinol.
Ann. Fals. et Expertise chim.
Ann. Inst. Pasteur
Ann. New York Acad. Sci.
Ann. pharm. frang.
Ann. Physik
Ann. Physique
Ann. Report Fac. Pharm., Kanazawa Univ.
Ann. Report Inst. Sauerbr. Res.
Ann. Report ITSU Lab.
Ann. Report Sankyo Res. Lab.
Ann. Reports Medicin. Chem.
Ann. Rev. Biochem.
Ann. Rev. Microbiol.
Ann. Rev. N.M.R. Spectroscopy
Ann. Rev. Phys. Chem.
Ann. Rev. Plant Physiol.
Ann. Soc. sci. Bruxelles
Ann. Stazione chim.-agrar. sper. Roma
Ann. Surveys Organometallic Chem.
Ann. Univ. M. Curie-Sklodowska, Sect. A
- Ann. Univ. Sci. Budapest, Sect. Chim.*
Annalen
Appl. Spectroscopy
Arch. Biochem. Biophys.
Arch. Pharm.
Arch. Sci.
Arkiv. Fysik
Arkiv. Kemi
Armenian. khim. Zhur.
Arzneim.-Forsch.
Atti Acad. nat. Lincei, Rend. Classe Sci. fis. mat. nat.
Austral. J. Biol. Sci.
Austral. J. Chem.
Austral. J. Phys.
Azerb. khim. Zhur.
- Ber. Bunsengesellschaft Phys. Chem.*
Berg- u. hüttenmänn. Monatsk. montan. Hochschule Leoben
Biochemistry
Biochemistry (U.S.S.R.)
Biochem. Biophys. Res. Comm.
Biochem. J.
Biochem. Pharmacol.
Biochem. Prep.
Biochem. Soc. Symp.
Biochim. appl.
Biochim. Biol. sper.
Biochim. Biophys. Acta
Biophysika
Biokhimiya
Biol. Rev. Camb. Phil. Soc.
Biopolymers
Biotechnol. and Bioeng.
Bol. Inst. Quim. agric. (Brazil)
Bol. Inst. Quim. Univ. nac. auton. Mexico
Bol. Soc. Chilena Quim.
Bol. Soc. quim. Peru
Boll. sci. Fac. Chim. ind. Bologna
Boll. Soc. Ital. Biol. sper.
Botyu-Kagaku
Brennstoff-Chem.
Brit. Bull. Spectroscopy
Brit. Chem. Eng.
Brit. Chemist
Brit. Corrosion J.
Brit. J. Pharmacol.
Bull. Inst. Politec. Iasi
Bull. Acad. polon. Sci., Sér. Sci. chim.
Bull. Acad. Sci., U.S.S.R.
Bull. Chem. Soc. Japan
Bull. Inst. Chem., Acad. Sinica
Bull. Inst. Chem. Res. Kyoto Univ.
Bull. Inst. Nuclear Sci. "Kértészék"
Bull. sci. Conseil Acad. R.S.F., Yougoslavie
Bull. Soc. chim. belges
Bull. Soc. chim. Beograd
Bull. Soc. Chim. biol.
Bull. Soc. chim. France
Bull. Soc. roy. Sci. Litte
- Canad. Chem. Processing*
Canad. J. Biochem.
Canad. J. Chem.
Canad. J. Chem. Eng.
Canad. J. Pharm. Sci.
Canad. J. Phys.
Canad. Spectroscopy
Carbohydrate Res.
Carbon
Catalysis Rev.
Cellulose Chem. Technol.
Cereal Chem.
Chem. Ag
Chem. analit.
Chem. and Ind.
Chem. and Pharm. Bull. (Japan)
Chem. and Phys. Carbon
Chem. and Phys. Lipids
Chem. Ber.
Chem. Comm.
Chem. Engineer
Chem. Eng. (Japan)
Chem. Eng. News
Chem. Eng. Progr.
Chem. Eng. Progr., Monographs
Chem. Eng. Progr., Symp.
- Chem. Eng. Sci.*
Chem. Erde
Chem. Heterocyclic Compounds
Chem. High Polymers (Japan)
Chem. in Britain
Chem. in Canada
Chem. Ind. (Düsseldorf)
Chem. Ind. Internat.
Chem.-Ing.-Tech.
Chem. Issty
Chem. Natural Compounds
Chem. Oil and Gas, Romania
Chem. Phys. Letters
Chem. Process Eng.
Chem. Processing
Chem. Processing (S. Africa)
Chem. Processing (U.S.A.)
Chem. prumysl
Chem. Rev.
Chem. Soc. Special Publ.
Chem. Stosovana
Chem. Tech. (Berlin)
Chem. Week
Chem. Weekblad
Chem.-Zig.
Chem. Zvesti
Chemist-Analyst
Chemist and Druggist
Chemistry (Quari. Chinese Chem. Soc., Formosa)
Chim. analit.
Chimica (Switz.)
Chimica e Industria
Chimie et Industrie
Chimika Chronika
Chromatographia
Chromatol. Rev.
Ciencia
Clinical Biochem.
Clinical Chem.
Clinica Chim. Acta
Coke and Chemistry (U.S.S.R.)
Coll. Czech. Chem. Comm.
Colloid J. (U.S.S.R.)
Combustion and Flame
Comm. Fac. Sci. Univ. Ankara
Compt. rend.
Compt. rend. Acad. bulg. Sci.
Compt. rend. Soc. Biol.
Compt. rend. Soc. Phys. Hist. nat. Genève
Compt. rend. Trav. Lab. Carlsberg
Co-ordination Chem. Rev.
Corrosion
Corrosion Sci.
Croat. Chem. Acta
Current Sci.
- Dansh Tidsskr. Farm.*
Dechema Monograph.
Deut. Farb.-Z.
Deut. Lebensm.-Rundschau
Developments Appl. Spectroscopy
Discuss. Faraday Soc.
Diss. Abs.
Doklady Akad. Nauk Armyan. S.S.R.
Doklady Akad. Nauk Azerb. S.S.R.
Doklady Akad. Nauk S.S.S.R.
Dopovidi Akad. Nauk Ukrain. R.S.R.
Ser. B.
Double-Liaison
- Educ. in Chem.*
Electroanal. Chem.
Electrochem. Technol.
Electrochim. Acta
Elektrokhimiya
Endavour
Enzymologia
Erdöl u. Kohle
Ernährungsforschung
European J. Biochem.
European J. Steroids
European Polymer J.
Experientia
- Fed. Proc.*
Ferment. i spirit. Prom.
Fette, Seifen, Anstrichm.
Finsha Kemistamfundets Medd.
Fiz.-khim. Mehk. Materialov
- Fiz. Metall. i Metalloz.*
Fluorine Chem. Rev.
Food
Food Manuf.
Food Technol.
Fortschr. Arzneim.
Fortschr. Chem. Forsch.
Fortschr. Chem. org. Naturstoffe
Fortschr. Hochpolym.-Forsch.
Fuel
- Gazzetta*
General Cytochem. Mikrok.
Geokhimiya
Gidrokhim. Mat.
Glom. Microbiol.
Glass Technol.
Grasas y Aceites
- Halogen Chem.*
Helv. Chim. Acta
Helv. Phys. Acta
High Energy Chem.
- Ind. Chim.*
Ind. chim. belge
Ind. and Eng. Chem.
Ind. and Eng. Chem. (Fundamentals)
Ind. and Eng. Chem. (Process Design)
Ind. and Eng. Chem. (Product Res. and Development)
Ind. Finishing
Ind. Lab.
Indian J. Appl. Chem.
Indian J. Biochem.
Indian J. Chem.
Indian J. Pure Appl. Phys.
Industria y Quimica
Ing. chim. (Bruxelles)
Inorg. Chem.
Inorg. Chim. Acta
Inorg. Chim. Acta, Rev.
Inorg. Materials
Inorg. Nuclear Chem. Letters
Inorg. Synth.
Inst. Internat. Chim. Solvay Conseil Chim.
Internat. Chem. Eng.
Internat. J. Appl. Radiation Isotopes
Internat. J. Quantum Chem.
Internat. J. Quantum Chem., Symp.
Internat. J. Radiation Biol.
Internat. Sugar J.
Internat. Z. Vitaminforsch.
Intra-Sci. Chem. Reports
Ion Exchange
Israel J. Chem.
Israel J. Technol.
Ital. J. Biochem.
Izvest. Akad. Nauk Kazakh. S.S.R., Ser. khim.
Izvest. Akad. Nauk Latv. S.S.R., Ser. khim.
Izvest. Akad. Nauk S.S.S.R., Neorg. Materialy
Izvest. Akad. Nauk S.S.S.R., Ser. khim.
Izvest. sibirsk. Otdel. Akad. Nauk, Ser. khim. Nauk
- Japan Analyst*
Japan Chem. Quart.
Jap. J. Pharmacol.
J. Agric. Chem. Soc. Japan
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J. Assoc. Public Analysts
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J. Chem. Educ.
J. Chem. and Eng. Data
J. Chem. Phys.
J. Chem. Soc. (A)
J. Chem. Soc. (B)
J. Chem. Soc. (C)
J. Chem. Soc. Japan
J. Chem. Soc. Japan, Ind. Chem. Sect.
J. Chem. U.A.R.
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J. Phys. (B)
J. Phys. (C)
J. Phys. (E)
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J. Phys. Soc. Japan
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J. Polymer Sci., A-1, Polymer Chem.
J. Polymer Sci., Part A-2, Polymer Phys.
J. Polymer Sci., Part B, Polymer Letters
J. Polymer Sci., Part C, Polymer Symposia
J. prakt. Chem.
J. Proc. Roy. Soc. New South Wales
J. Quant. Spectroscopy Radiative Transfer
J. Radioanal. Chem.
J. Res. Inst. Catalysis, Hokkaido Univ.
J. Res. Nat. Bur. Stand., Sect. A
J. S. African Chem. Inst.
J. Sci. Food Agric.
J. Sci. Hiroshima Univ.
J. Sci. Ind. Res., India
J. Sci. Instr.
J. Soc. Cosmetic Chemists
J. Soc. Dyers and Colourists
J. Soc. Leather Trades' Chemists
J. Struct. Chem.
J. Synthetic Org. Chem., Japan
J. Textile Inst.

Khim. geterotsikl. Soedinenii
Khim. i Ind.
Khim. i nef. Mashinost.
Khim. prirod. Soedinenii
Khim. Prom.
Khim. Volokna

Khim. vysok. Energii
Kinetics and Catalysis (U.S.S.R.)
Kinetika i Kataliza
Kolloid-Z.
Kolloid. Zhur.
Kristallografiya
Kunst. Plastics

Lab. Practice
Lipids

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Macromol. Synth.
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Magyar Kem. Lapja
Macromol. Chem.
Manuf. Chemist
Mededel. vlam. chem. Ver.
Mekh. Polimerov
Melliand Textilber.
Mem. Fac. Sci. Kyushu Univ.
Mem. Inst. Protein Res., Osaka Univ.
Mem. Inst. Sci. Ind. Res., Osaka Univ.
Mem. Poudres
Methods Biochem. Analysis
Microchem. J.
Mikrochim. Acta
Mitt. deut. pharm. Ges.
Mol. Crystals
Mol. Phys.
Monatsh.

Nachr. Akad. Wiss. Göttingen, Math.-phys. Kl.
Nahrung
Nature
Naturwiss.
Neftekhimiya

Orbital
Osterr. Chem.-Ztg.
Optics and Spectroscopy
Org. Analysis
Org. Mass Spectrometry
Org. Photochem.
Org. Reaction Mech.
Org. Reactions
Org. Synth.
Organometallic Chem. Rev.
Organometallic Synth.
Oxidation and Combustion Rev.

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Paint Technol.
Pakistan J. Sci.
Pakistan J. Sci. Ind. Res.
Pakistan J. Sci. Res.
Parfumerie u. Kosmetik
Perfumery Essent. Oil Record
Periodica Polytech.
Perspectives in Structural Chem.
Pharm. Acta Helv.
Pharm. J.
Pharm. Weekblad
Pharm. Zentralhalle
Phil. Mag.
Phil. Trans.
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Photoelectric Spectromet. Group Bull.
Phys. and Chem. Earth
Phys. and Chem. Glasses
Phys. Rev.
Phys. Rev. Letters
Physica
Physicochemistry
Plastics and Polymers
Polymer
Polymer Sci. (U.S.S.R.)
Postepy Biochem.
Priklad. Biokhim. i Mikrobiol.
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Proc. Brit. Ceram. Soc.
Proc. Cambridge Phil. Soc.
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Proc. Japan Acad.
Proc., h. ned. Akad. Wetenschap.
Proc. Nat. Acad. Sci., India
Proc. Nat. Acad. Sci. U.S.A.
Proc. Phys. Soc.
Proc. Roy. Soc.

Proc. Roy. Soc. Edinburgh
Proc. Soc. Exp. Biol. Med.
Proc. Soil Sci. Soc. Amer.
Process Biochem.
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Progr. Boron Chem.
Progr. Chem. and Chem. Ind.
Progr. Chem. Fats and Lipids
Progr. Inorg. Chem.
Progr. N.M.R. Spectroscopy
Progr. Nucleic Acid Res.
Progr. Org. Chem.
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Progr. Polymer Sci.
Progr. Reaction Kinetics
Progr. Solid-State Chem.
Progr. Stereochem.
Przemysl Chem.
Pure Appl. Chem.
Pyrethrum Post

Quart. Reports Sulphur Chem.
Quart. Rev.
Quimica e Industria

Radiation Res.
Radiochim. Acta
Radiochim. Acta
Reakts. spos. org. Soedinenii
Rec. Chem. Progr.
Rec. Trav. chim.
Recent Developments Chem. Natural
Carbon Compounds
Recent Progr. Hormone Res.
Recent Progr. Surface Sci.
Rocherches
Rend. Accad. Sci. fis. mat. (Napoli)
Reports Govt. Chem. Ind. Res. Inst., Tokyo
Reports Inst. Phys. Chem. Res. (Japan)
Reports Progr. Phys.
Residue Rev.
Rev. Asoc. bioquim. argentina
Rev. Chim. (Roumania)
Rev. Chim. minerale
Rev. Fac. Cienc. quim., Univ. nac. La Plata
Rev. Fac. Farm. Bioquim., Univ. nac. mayor San Marcos
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Rev. Roumaine Chim.
Rev. Sci. Instr.
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Rev. Univ. ind. Santander Colombia
Ricerca sci.
Rozaniki Chem.
Roy. Inst. Chem., Lecture Series
Roy. Inst. Chem. Rev.
Rubber Chem. Technol.
Rubber Plastics Age
Russ. Chem. Rev.
Russ. J. Inorg. Chem.
Russ. J. Phys. Chem.

Safybi
Sbornik Prac Chem. Fak. S.V.S.T.
Schweiz. Apoth.-Ztg.
Sci. Papers Coll. Gen. Educ., Univ. Tokyo
Sci. Papers Univ. Chem. Technol., Paratibice
Sci. Papers Inst. Phys. Chem. Res., Tokyo
Sci. Proc. Royal Dublin Soc.
Sci. Reports Res. Inst., Tohoku Univ.
Sci. Reports Tohoku Univ.
Science
Science and Culture
Separation Sci.
Soap
Soc. Sci. Fennica, Commentationes Phys.-Math.
Soc. Sci. Lond. Acta Chim.
Soil Sci.
Soviet Phys. Cryst.
Spectrochim. Acta
Sperimientale

Stärke
Stain Technol.
Standard Methods Clin. Chem.
Steroids
Structure and Bonding
Studia Univ. Babeş-Bolyai, Ser. Chem.
 Suomen Kem.
Surface Sci.
Svensk kem. Tidskr.
Svensk Papperstidn.
Synthetic Methods Org. Chem.

Talanta
Technol. Reports Osaka Univ.
Technol. Reports Tohoku Univ.
Teor. i eksp. Khim.
Teor. Osnovy khim. Tekhnol.
Tetrahedron
Tetrahedron Letters
Textile Inst. and Ind.
Textile Res. J.
Theor. and Exp. Chem.
Theor. Chim. Acta
Tidsskr. Kjemi Bergusen Md. (Kjemi)
Topics Stereochem.
Trans. Brit. Ceram. Soc.
Trans. Chalmers Univ. Technol., Gothenburg
Trans. Faraday Soc.
Trans. Inst. Chem. Engineers
Trans. Inst. Metal Finishing
Trans. J. Plastics Inst.
Trans. Roy. Soc. Canada
Transition Metal Chem.
Trudy Inst. Elektrokhim. Akad. Nauk S.S.S.R., Ural'skii Filial
Trudy Inst. khim. Akad. Nauk Azerb. S.S.S.R.
Trudy Inst. khim. Nauk, Akad. Nauk Kazakh. S.S.S.R.
Trudy Khim. i khim. Tekhnol.
Trudy Kom. analit. Khim., Akad. Nauk S.S.S.R.

Ukrain. biokhim. Zhur.
Ukrain. khim. Zhur.
Uspekhi Khim.
Uzbek. khim. Zhur.

Verhandel. h. ned. Akad. Wetenschap., Afd. Naturk.
Vestnik Leningrad. Univ. (Fiz. Khim.)
Vestnik Moskov. Univ.
Vestnik Slovensk. kem. Drustva
Vespremi Vegyi. Egyetem Kos.
Vitamins and Hormones
Voprosy med. Khim.
Vysokomol. Soedineniya

Wallerstein Lab. Comm.
Wiss. Z. tech. Hochschule Chem. Leuna-Merseburg
Zavodskaya Lab.
Z. analyt. Chem.
Z. anorg. Chem.
Z. Chem.
Z. Krist.
Z. Lebensm.-Untersuch.
Z. Naturforsch.
Z. phys. Chem. (Frankfurt)
Z. phys. Chem. (Leipzig)
Z. Physik
Z. physiol. Chem.
Z. Vitamin-Hormon-u.Ferment-forsch.
Z. wiss. Phot.
Zeszyty Nauk., Mat., Fiz. Chem.
Zeszyty Nauk. Politech. lodz. (Chem.)
Zhur. analit. Khim.
Zhur. eksp. teor. Fiz.
Zhur. E.T.F. Letters
Zhur. evol. Biokhim. i Fiziol.
Zhur. fiz. Khim.
Zhur. nauch. priklad. Fotograf. Kinemat.
Zhur. neorg. Khim.
Zhur. obshchei Khim.
Zhur. org. Khim.
Zhur. priklad. Khim.
Zhur. priklad. Spektroskopii
Zhur. strukt. Khim.
Zhur. Vsesoyuz. Khim. obshch. im. D. T. Mendeleeva

The International System of Units (SI)

Preamble

For many years the practice of The Society in respect of units has been based on the recommendations of a joint Committee of The Royal Society, The Chemical Society, The Faraday Society, and The Physical Society. The 1951 set of recommendations published by that Committee formed the basis of Chapter 7 of the 'Handbook for Chemical Society Authors' but since their promulgation much effort has been expended in international circles to devise and approve a basic set of coherent units. This having been completed, The Joint Symbols Committee of The Royal Society, of which The Chemical Society is a participating member, has produced a completely new set of recommendations in a pamphlet 'Symbols, Signs and Abbreviations' 1969 (copies of this pamphlet or further details can be obtained from the Managing Editor, The Chemical Society, Burlington House, London, W1V 0BN). The basis of the new recommendations is the 'Système International d'Unités' (to be abbreviated to SI, in all languages).

The advantages offered by SI are as follows.

(i) It is a truly coherent system, *i.e.* the product or quotient of any two unit quantities in the system is the unit of the resultant quantity. This contrasts with the previous situation where, even in metric systems used within the same discipline, many additional units are arbitrarily and sometimes differently defined.

(ii) SI derives nearly all the quantities needed in all sciences and technologies from a very small set of base-units.

(iii) The variety of multiples and sub-multiples in common use is minimized.

(iv) A more uniform presentation can be ensured.

(v) Presentation is such that the relation of any derived unit, or multiple or sub-multiple of a derived unit, to the coherent unit is always obvious and simple.

Policy

(1) The Society announces its approval and support of SI, and its intention that SI shall become the preferred system in its publications.

(2) *Guidelines for the publications of the Society.* The Society realises that public acceptance of this system will be more a matter of education and tolerance than of dictatorial action. It nevertheless desires that the SI system and units compatible with it shall rapidly become the established standard in the Society's publications. An author will not be denied any reasonable usage, but if non-SI units are used for critical data or for quantities measured to a high order of accuracy (as opposed to the rough physical conditions of an experiment), the definitive values will be expressed in SI units as well.

The following will be the guidelines used:

- (a) A metric system will always be used in preference to a non-metric one.
- (b) The SI system will be the standard usage.

- (c) The units used to record the *definitive* values of 'critical data' or quantities measured to high degree of accuracy will be of the SI system.
- (d) When non-SI units are used they must be adequately explained unless their definition is obvious (*e.g.* degree Celsius, mmHg, g, h). The derivation of derived non-SI units will be indicated.
- (e) Equations involving electrical quantities should normally be those appropriate for use with SI (rationalized m.k.s) units. If authors wish to use equations suitable for e.s.u. or e.m.u. the lack of consistency with SI units must be explicitly noted.
- (3) *The principal changes.* There are four of these:
 - (a) Basic units: the metre and the kilogramme replace the centimetre and the gramme of the old metric system.
 - (b) The unit of force is now the newton (kg m s^{-2}).
 - (c) The unit of energy is the joule and of power the joule per second (watt); thus the variously defined calories and non-metric units of energy and power are superseded.
 - (d) 'Electrostatic' and 'electromagnetic' units are replaced by SI electrical units.

Detail

(4) *Definition.* A quantity is expressed as the product of a numerical value and a unit.

(5) *The System.* The fully coherent SI consists of base-units, supplementary units, derived units, and decimal multiples and sub-multiples of these units, formed by use of prefixes only.

(6) *Coherent systems.* A coherent system is one based on a selected set of 'base-units' from which 'derived units' are obtained by multiplication without introducing numerical factors.

(7) *Base-units.* The name International System of Units (SI) was adopted by the Conférence Générale de Poids et Mesures in 1960 for the coherent system now based on the base-units given in Table 1.

TABLE 1

Physical quantity	Name of base-unit	Symbol for unit
length	metre	m
mass	kilogramme	kg
time	second	s
electrical current	ampere	A
thermodynamic temperature	kelvin	K
luminous intensity	candela	cd
amount of substance	mole	mol

(8) *Supplementary units.* The SI also includes two 'supplementary' dimensionless units as follows:

Physical quantity	Name of unit	Symbol for unit
plane angle	radian	rad
solid angle	steradian	sr

(9) *Multiples and sub-multiples.* In the SI there is one and only one basic unit for each physical quantity. Decimal fractions and multiples of these basic units may, however, be constructed by use of certain prefixes (see Table 2). They may also be used with derived SI units.

TABLE 2					
Fraction	Prefix	Symbol	Multiple	Prefix	Symbol
10 ⁻¹	deci	d	10	deka	da
10 ⁻²	centi	c	10 ²	hecto	h
10 ⁻³	milli	m	10 ³	kilo	k
10 ⁻⁶	micro	μ	10 ⁶	mega	M
10 ⁻⁹	nano	n	10 ⁹	giga	G
10 ⁻¹²	pico	p	10 ¹²	tera	T
10 ⁻¹⁵	femto	f			
10 ⁻¹⁸	atto	a			

The combination of a prefix and a unit symbol constitutes a new single unit symbol; compounding of prefixes is not permitted.

Although it will not always be possible, particularly in Tables, the general principle should be to choose a unit (*i.e.* including multiple or sub-multiple) such that the resulting numerical value is between 0.1 and 1000.

(10) *Derived units.* Some derived units have special names and symbols, and these are given in Table 3.

TABLE 3				
Physical quantity	Name of SI unit	Symbol for SI unit	Definition of SI unit	
energy	joule	J	kg m ² s ⁻²	
force	newton	N	kg m s ⁻² = J m ⁻¹	
power	watt	W	kg m ² s ⁻³ = J s ⁻¹	
electric charge	coulomb	C	A s	
electric potential difference	volt	V	kg m ² s ⁻³ A ⁻¹ = J A ⁻¹ s ⁻¹	
electric resistance	ohm	Ω	kg m ² s ⁻³ A ⁻² = V A ⁻¹	
electric capacitance	farad	F	A ² s ⁴ kg ⁻¹ m ⁻² = As V ⁻¹	
magnetic flux	weber	Wb	kg m ² s ⁻² A ⁻¹ = Vs	
inductance	henry	H	kg m ² s ⁻² A ⁻² = V A ⁻¹ s	
magnetic flux density				
density	tesla	T	kg s ⁻² A ⁻¹ = V s m ⁻²	
luminous flux	lumen	lm	cd sr	
illumination	lux	lx	cd sr m ⁻²	
frequency	hertz	Hz	s ⁻¹	

Others do not

Physical quantity	SI unit	Symbol for SI unit
area	square metre	m ²
volume	cubic metre	m ³
density	kilogramme per cubic metre	kg m ⁻³
velocity	metre per second	m s ⁻¹
angular velocity	radian per second	rad s ⁻¹
acceleration	metre per second squared	m s ⁻²
pressure	newton per square metre	N m ⁻²
kinematic viscosity, diffusion coefficient	square metre per second	m ² s ⁻¹
dynamic viscosity	newton second per square metre	N s m ⁻²
electric field strength	volt per metre	V m ⁻¹
magnetic field strength	ampere per metre	A m ⁻¹
luminance	candela per square metre	cd m ⁻²

TABLE 5

Physical quantity	Name of unit	Symbol for unit	Definition of unit
length	inch	in	2.54 × 10 ⁻² m
mass	pound (avoirdupois)	lb	0.453 592 37 kg
time *	minute	min	60 s
time *	hour	h	3600 s
force	kilogramme-force	kgf	9.806 65 N
force	pound-force	lbf	9.806 65 × 0.453 592 37 N
pressure	atmosphere	atm	101 325 N m ⁻²
pressure	conventional millimetre of mercury	mmHg	13.5951 × 9.806 65 N m ⁻²
pressure	torr	Torr	(101 325/760) N m ⁻²
pressure	pound-force per square inch	lbf in ⁻²	9.806 65 × 4535.9237 / 6.4516 N m ⁻²
energy	kilowatt hour	kWh	3.6 × 10 ⁶ J
energy	thermochemical calorie	cal(thermochem.)	4.184 J
energy	I.T. calorie	cal _{IT}	4.1868 J
thermodynamic temperature	degree Rankine	°R	(5/9) K
radioactivity	curie	Ci	3.7 × 10 ¹⁰ s ⁻¹

* Use of other common units (min, h, day) may continue in normal expressions of intervals of time.

(11) *Symbol.* The symbol for a unit will be printed in roman (upright) type, remains unaltered in the plural and does not take a full point, *i.e.* 5 cm not 5 cm. or 5 cms or 5 cms.

The symbol will be separated from the numerical value by a thin space.

(12) *Decimal fractions and multiples of SI units having special names.* These names are not part of the SI, but for the time being their use in The Society's publications may continue. The list given in Table 4 is not exhaustive.

TABLE 4

Physical quantity	Name of unit	Symbol unit	Definition of unit
length	ångström	Å	10 ⁻¹⁰ m = 10 ⁻¹ nm
length	micron	μm	10 ⁻⁶ m
area	barn	b	10 ⁻²⁸ m ²
volume	litre	l	10 ⁻³ m ³ = dm ³
mass	tonne	t	10 ³ kg = Mg
force	dyne	dyn	10 ⁻⁵ N
pressure	bar	bar	10 ⁵ N m ⁻²
pressure	pascal	Pa	N m ⁻²
energy	erg	erg	10 ⁻⁷ J
kinematic viscosity			
diffusion coefficient	stokes	St	10 ⁻⁴ m ² s ⁻¹
dynamic viscosity	poise	P	10 ⁻¹ kg m ⁻¹ s ⁻¹
magnetic flux	maxwell	Mx	10 ⁻⁸ Wb
magnetic flux density (magnetic induction)	gauss	G	10 ⁻⁴ T
conductance	siemens	S	Ω ⁻¹

(13) *Units defined in terms of the best available experimental values of certain physical constants.* These units are not part of the SI. The factors for conversion of these units to SI units are subject to change in the light of new experimental measurements of the constants involved. Their use outside the restricted contexts to which they are appropriate should be discouraged. The following list is not exhaustive.

Physical quantity	Name of unit	Symbol for unit	Conversion factor
energy	electronvolt	eV	eV ≈ 1.6021 × 10 ⁻¹⁹ J
mass	unified atomic mass unit	u	u ≈ 1.660 41 × 10 ⁻²⁷ kg

(14) *Other units now exactly defined in terms of the SI units.* These units are not part of the SI. It is recognized that their use may be continued for some time but it is recommended that except in special circumstances they should be progressively abandoned in conformity with international recommendations. The list given in Table 5 is by no means exhaustive. Each of the definitions given in the fourth column is exact.

Formulae and Figures

The purpose of all illustrative matter in a paper is to clarify the arguments and descriptions rather than to duplicate them. The Society strongly encourages the use of displayed formulae, particularly in the form of schemes where the details of a reaction sequence are often more easily understood when illustrated than when described in the text.

All formulae and figures should be clearly drawn, and in the case of figures provided with captions; the latter should be typed on a separate sheet. Since all formulae carry a key number by which they are identified, unless they form part of the running text or unless they are part of a scheme which itself has a caption, they are not generally further described. Blocks of formulae do not need a caption.

Illustrative matter is divided, for technical reasons, into figures and formulae, although in many cases (e.g. crystal structures which may be regarded as formulae but which are treated as figures) these divisions overlap.

Structural Formulae.—(a) Only those formulae which are displayed may be given key numbers. In all other cases the compounds concerned are referred to by name only.

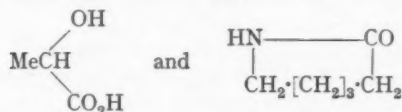
(b) Formulae are numbered sequentially with bold arabic numerals in parentheses [(1), (2), and (3) *etc.*] as they are displayed and *not* as they are mentioned in the text.

(c) In complex reaction schemes the formulae should be numbered serially following the reaction sequence. Non-sequential numbering in a collection of formulae can render it hard to locate an individual number.

(d) Structural or displayed formulae must be carefully and accurately drawn or typed on a separate sheet, rather than inserted into the text, although a marginal indication of where they are to go in the text is desirable.

(e) Formulae inserted into the body of the text (as distinct from those displayed separately) should be written on one line if possible, e.g.

$\text{HO}\cdot\text{CHMe}\cdot\text{CO}_2\text{H}$ and $\text{NH}\cdot[\text{CH}_2]_5\cdot\text{CO}$ rather than



(f) Points (which may be typed as full stops) are used to indicate bonds between the atoms of the backbone chain of a compound. The symbol of each element of that chain is preceded by a full stop (or colon for a double bond) and followed by the symbols or formulae of the atoms or groups that are attached to it (parentheses being used where necessary to enclose compound groups), e.g. $o\text{-HO}\cdot\text{C}_6\text{H}_4\cdot\text{CH}_2\cdot\text{NH}_2$ and $\text{CH}_2\text{Cl}\cdot\text{CH}(\text{OH})\cdot\text{CO}_2\text{H}$.

Groups that are indicated by a single symbol (e.g. Me and Et *etc.*) do not need use of such full stops.

Repeating sequences of a backbone composite group are enclosed with square brackets and their number is indicated by an inferior multiplier, e.g. $\text{HO}\cdot[\text{CH}_2]_4\cdot\text{NH}_2$, but $\text{HO}\cdot[\text{CH}_2]_4\cdot\text{N}(\text{CH}_2\cdot\text{OH})_2$.

(g) The use of large circles to represent six delocalized π -electrons in cyclic systems (with or without positive or negative signs as appropriate) is permitted in certain circumstances. Cyclic systems with more or less than six delocalized π -electrons may be represented by formulae containing dotted lines. Both topics are dealt with in *Proceedings*, 1959, 75.

(h) Customary steric conventions must be observed, notably for steroids, triterpenes, and carbohydrates. The Society uses wedges (\blacktriangle) or heavy lines (—) rather than blocked circles (\bullet) and broken lines in the form ----- rather than |||| .

(i) The symbols Me, Et, Prⁿ, Prⁱ, Buⁿ, Buⁱ, Bu^s, Bu^t, Ph, Ac, Bz (the symbol for PhCO and not for PhCH₂), Alk, Ar, and Hal, should be used but may be written in full when the groups are involved in the reaction described. Other special symbols, if used, require an explanatory footnote. The carboxy-group is written CO₂H (*not* COOH) and similarly CO₂R.

(j) One variable univalent substituent is indicated by R; when more than one independently variable general substituent is present, R¹, R², and R³ should be used (*not* R, R¹, R², R³; or R₁, R₂, and R₃ which indicate 1 \times R and multiples of R thereof).

(k) Often it is desirable to use one formula to represent a number of related compounds (or classes of compounds) by the use of one or more independently variable substituents. It is preferable to give each compound thus represented a separate key number rather than to subdivide individual key numbers by alphabetical suffixes [*i.e.* (1a), (1b), (1c) *etc.*].



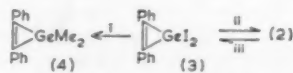
- (1) R¹ = R² = Ph, R³ = Me, X = O
(2) R¹ = Me, R² = R³ = Ph, X = S



- (3) R¹ = Me, R² = Ph, R³ = Bz
(4) R¹R² = CO·O·CO, R³ = Ph

The use of more than four independently variable substituents or atoms on one generalized formula is discouraged.

(l) Once a formula has been displayed it is permissible to employ its key number in later reaction schemes or equations rather than to re-display the formula:



Reagents: i, MeMgI; ii, NaOH; iii, HI

It should be noted that reagents and reaction conditions are given as footnotes to the scheme for economy of space; if present, an equation number is set as far to the right as possible, and if there is likelihood of

confusion with compound key-numbers it is accompanied by the word equation.

(m) Displayed formulae, unless they are capable of being typed on one line [see point (e) above], should not be included in tables; they should be displayed before the table with a key number for each compound and this should be used in the table.

(n) The key number for a compound may be used in the cursive text to avoid repetition of long chemical names; this device must not be used to excess. In general it is preferred if the key number is qualified by a partial name for the compound as in the following example:

'Pyolin (1) was oxidized by permanganate to the oxo-acid (2), the methyl ester (3) of which with methylmagnesium iodide gave the normal product (4)'.

(o) Reference to compounds in the Summary by key number alone is not allowed since a summary should be comprehensible without reference to the body of the paper itself. The reference number should, however, accompany the name of the compound to which it refers.

Figures.—(a) Figures must bear on the back the names of the authors, the title of the paper (abbreviated if necessary), and the number of the figure.

(b) Figures must be an Indian ink, on Bristol board, white smooth cartridge paper, tracing linen, plastic film (it is essential that the special plastic ink developed for this is used), or graph paper with *faint* blue lines (red or brown lines must not be present as these may be reproduced by the photographic process of block making). Since lines must be black and sharp, photostats or similar prints are often not suitable. If paper is used, it must be strong enough to withstand repeated handling.

(c) Lettering and numerals must be in *blue pencil* (not red or black pencil or ink) clearly legible but not so heavily scored as to make a permanent impression on the paper or board.

(d) When the figures are large (more than 8 in \times 10 in), smaller copies (which may be rough, as long as they are clear) should be supplied for submission to the referees; editing will not be undertaken, however, before the final figures are received.

(e) Figures must be carefully drawn, preferably three times the size (linear) that seems necessary to ensure sharp printing, but excessive reduction is costly and illustrations that exceed five times the size of the finished block may be returned to the author for redrawing.

(f) Two-inch margins are essential all round figures. Lettering for insertion at margins should be placed well clear of the ordinate or abscissa line so that it can be copied before erasure.

Lettering and touching-up are done by the Society and clarity of instructions is essential. When there is much lettering, or complicated lettering, and always when tracing linen or plastic film is used, a rough tracing should be added with the lettering shown in ink.

(g) Since, for printing, the size is reduced, lines should not be too thin. Given lines must be of even thickness, angles neat, and curves smooth.

(h) Graphs should have only the requisite minimum of the scale (not less than three points) marked by numerals, and the scale lines should not normally be continued into the body of the figure.

(i) Graphs in any one paper should, when convenient, be drawn to the same scale, and scale markings should, when possible, be identical so that the graphs may be placed adjacent on the page. Contrariwise, two curves drawn to different scales can be shown on one graph by having the appropriate scales on the left-hand and the right-hand side. The use of both right- and left-hand axes and top and bottom axes on figures which have quantitative significance is encouraged.

(j) Experimental points must be shown sufficiently large to be distinguishable when reduced in size. Whenever possible, they should be confined to open and closed circles, crosses, squares, and triangles. Partly black circles and similar signs frequently become indistinguishable in print.

(k) Curves may be distinguished as full lines (—), broken (---) or dotted lines (····), and dot-dash lines (— · — · —); further differentiation should normally be achieved by labelling the curves, which is, in any case, desirable.

(l) For reference in legends, it is preferable to mark curves A, B, C, *etc.* rather than to reproduce the type of line in print.

(m) There must be no unnecessary waste space, *e.g.* around curves; ordinates and abscissae should start at zero only if the curve extends to that range. Enlargement of parts of a figure can occasionally be placed in a corner of the complete figure.

(n) It is not advisable to insert much or complicated lettering on curves or in blank spaces; mistakes (in copying by the artist) can rarely be rectified once the block is made. It is better to label the curves A, B, C, *etc.* and to use explanatory legends.

(o) Large solid objects should be represented by hatching rather than by black surfaces, otherwise the ink may smear on printing.

(p) Photographs are reproduced by a half-tone process on art paper. The prints supplied must be very clear and of good contrast, as considerable definition may be lost in reproduction.

(q) Captions and explanatory legends, to be set by the printer should be typed on a separate page attached to the manuscript, and not given on the figure itself.

(r) Figures are numbered consecutively Figure 1, Figure 2, *etc.* (in arabic numerals). Photographs (half-tone reproduction) are numbered consecutively Plate 1, Plate 2, *etc.* but these numbers are independent of the numbering of any figures.

(s) Since figures represent an uneconomical use of space their number and size should be kept to a minimum. Figures and tables for the same values are discouraged.

Deposition of Data—Supplementary Publications Scheme

Preamble

The growing volume of research that produces large quantities of data, the increasing facilities for analysing such data mechanically, and the rising cost of printing are each making it very difficult to publish in the *Journal* in the normal way the full details of the experimental data which become available. Moreover, whilst there is a large audience for the general method and conclusions of a research project, the number of scientists interested in the details, and in particular in the data, of any particular case may be quite small. The National Lending Library (N.L.L.) in consultation with the Editors of scientific journals, has now developed a scheme whereby such data and detail may be stored and then copies made available on request at the N.L.L., Boston Spa. The Chemical Society is a sponsor of this scheme and has indicated to the National Lending Library its wish to use the facilities being made available in this 'Supplementary Publications Scheme'.

Bulk information (such as crystallographic structure factor tables, computer programmes and output, evidence for amino-acid sequences, spectra, etc.), which accompany papers published in future issues of the Chemical Society's *Journal* may in future be deposited, free of charge, with the Supplementary Publications Scheme, either at the request of the author and with the approval of the referees or on the recommendation of referees and the approval of the author.

The Scheme

Under this scheme, authors will submit articles and the supplementary material to the *Journal* simultaneously in the normal way, and both will be refereed. If the paper is accepted for publication the supplementary material will be sent by the Society to the National Lending Library where it will be stored on microfiche. Microfiche and enlarged copies will be obtainable by individuals both in the U.K. and abroad on quoting a supplementary publication number that will appear in the parent article. Difficult or oversized material may only be available as 35 mm microfilm or enlarged copies.

The Microfiche

A single microfiche will accommodate 58 pages in microform, plus an eye-visible title; additional pages are accommodated on numbered 'trailer' fiches, each holding 69 pages. The eye-visible title on the first microfiche will comprise the supplementary publication number (see below), the authors' names, and the bibliographic reference to the parent article which the microfiche supplements.

Authors will be responsible for the preparation of camera-ready copy according to the following specifications (although the Society will be prepared to help in case of difficulty).

- (a) Optimum page size for text or tables in type-script: up to 30 cm × 21 cm.
- (b) Limiting page size for text or tables in type-script: 33 cm × 24 cm.
- (c) Limiting size for diagrams, graphs, spectra, etc.: 39 cm × 28.5 cm.
- (d) Tabular matter should be headed descriptively on the first page, with column headings recurring on each page.
- (e) Pages should be clearly numbered to ensure the correct sequence of frames on the microfiche.

It is recommended that all material which is to be deposited should be accompanied by some prefatory text. Normally this will be the summary from the parent paper and authors will greatly aid the deposition of the material if a duplicate copy of the summary is provided. If authors have the facilities available the use of a type face designed to be read by computers is encouraged.

Deposition

The Society will be responsible for the deposition of the material with the National Lending Library. The N.L.L. will not receive material direct from authors since the Library wishes to ensure that the material has been properly and adequately refereed.

Action by the Society

The Society will receive a manuscript for publication together with any supplementary material for deposition and will circulate all of this to referees in the normal way. When the edited manuscript is sent to the printers the supplementary material will be sent for deposition to the National Lending Library who will issue the necessary publication number. The Society will add to the paper, at the galley proof stage, a footnote indicating what material has been deposited in the Supplementary Publications Scheme, the number of microfiches it occupies, the supplementary publication number, and details as to how copies may be obtained.

Availability

This supplementary material will be available either as microfiche or as a photographic enlargement, from the National Lending Library's photocopying service. This works on a prepaid, flat rate, coupon basis.

The present coupon purchases one or two microfiches of the same item, or 1—10 pages of enlargement from the same item (or, where appropriate, 1—20 pages from the same item on 35 mm microfilm). The present coupon costs are:

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It is realised that not all users will want to purchase 50 coupons at a time. The Society is therefore prepared to act as agent and hold coupons which may then be purchased from the Society at the prices quoted above.

In all correspondence with the National Lending Library or the Society authors must cite the supplementary publications number.

International Collaboration

A similar scheme (known as the National Auxiliary Publications Service) is being operated in the U.S.A. by the American Society for Information Science. Similar schemes are also being contemplated in other countries. The provision of reciprocal arrangements for the exchange of supplementary data between the various national deposition centres is being investigated.

NOTICES TO AUTHORS—No. 8/1970

X-Ray Crystallographic Structure Factor Tables

The Society has recently taken advice from the members of its Chemical Crystallography Group and as a result of this and of the inception of the National Lending Library Supplementary Publications Scheme (discussed in Notices to Authors No. 7) the following rules are being taken into use forthwith to govern the publication or deposition of X-ray crystallographic structure factor tables.

(i) The Society will no longer publish tables of structure factors in its publications except in accordance with the provision of paragraph (iv) below.

(ii) All authors of crystallography papers will submit along with the manuscript a readable table of such structure factors for the referees' inspection. The table should be prepared in accordance with the detail given in paragraph 3 of Notices to Authors No. 7 so that it may be used for deposition. Computer printout may be used providing that it is top copy in good contrast (see note).

(iii) If the referees accept the paper and its associated structure factor tables then the Society will deposit these structure factor tables in the National Lending Library Supplementary Publications Scheme

(see Notices to Authors No. 7) and will publish as a footnote to the paper the necessary details that will enable any reader to obtain a copy in microfiche or an electrophotographic printoff of the data tables associated with the paper.

(iv) Authors, or the referees, may request publication of such tables of structure factors, *in extenso*, in cases that seem to them to be desirable. It is expected that this will occur only rarely.

(v) The details of the National Lending Library Supplementary Publications Scheme and the methods for obtaining microfiche or photographic printoff of material deposited with that scheme are given in Notices to Authors No. 7.

Note to paragraph (ii). Structure factor tables prepared from computer printout must be presented in the form indicated in paragraph 3 of Notices to Authors No. 7 and must be arranged with the greatest economy of space possible [*i.e.* not less than two groups of columns (h, k, l, F_o, F_c) to the page (30 cm \times 21 cm)]. All columns must be headed. A 'paste-up' on white card of computer printout will be acceptable providing the quality of the printout is adequate.

ERRATA

Daltons Transactions

Corrigendum to:

Correlation of Fe^{II} Low-spin Mössbauer Quadrupole Splittings and the 1T_1 Splitting in the Electronic Spectra of Iron(II) Isocyanide Compounds. The Oxidation State of Tin in the Tin Trichloride Ligand¹

By G. Michael Bancroft and K. David Butler, Chemistry Laboratories, University of Western Ontario, London 72, Canada

During further studies on Fe^{II} isocyanide compounds, we have found that the labelling of *cis*- and *trans*- $\text{FeCl}_2(\text{ArNC})_4$ was incorrectly made during the processing of our previous results. The correct labelling and the new correct assignments to the electronic spectra are given in the Table. The 2 : 1 *trans-cis* Δ^1T_1 splitting is still apparent with this new assignment. However the overall correlation between quadrupole splittings (q.s.) and Δ^1T_1 is not as satisfactory as was previously reported. The sensitivities of the q.s. and Δ^1T_1 must be appreciably different to σ and π bonding properties of ligands.

Corrections to Table 1, *J.C.S. Dalton*, 1972, 1209.

Compound	Peak positions Reflectance	Assignment	ΔT_1 (cm^{-1}) (mm s ⁻¹)	⁵⁷ Fe q.s.
<i>cis</i> - $\text{FeCl}_2(\text{ArNC})_4$	21,000	$^1A_1 \rightarrow ^1E$	3200	0.78
	24,200	$^1A_1 \rightarrow ^1A_g$		
<i>trans</i> - $\text{FeCl}_2(\text{ArNC})_4$	17,400	$^1A_1 \rightarrow ^1A_g$	~6000	1.55
	21,700—	$^1A_1 \rightarrow ^1E_g$		
	24,100sh			

Note: In Figure 1, spectrum (a) is due to *cis*- $\text{FeCl}_2(\text{ArNC})_4$, and spectrum (c), to *trans*- $\text{FeCl}_2(\text{ArNC})_4$.

¹ *J.C.S. Dalton*, 1972, 1209.

1972, page 1953, Table 3, columns 3 and 4.

2nd entry For 202 read 220
4th entry For 3.118 read 3.121; for 206 read 204.
10th entry For 2.316 read 2.311; for 406 read 404.
13th entry For 1.883 read 1.884; for 610 read 620.
26th entry For 1.344 read 1.346; for 826 read 824.

1973, page 397. Figure 1. The dihedral angles given are incorrect.

$\text{P}(1')\text{-N}(1')$: for 0.2° read 49.6°
 $\text{P}(1')\text{-N}(2')$: for 20.6° read 5.0°
 $\text{P}(2')\text{-N}(2')$: for 2.6° read 40.0°
 $\text{P}(2')\text{-N}(1)$: for 18.9° read 65.8°

page 398. r.h.s. lines 20 * and 19 *. For 16° and 20° read 44.6° and 25.8° .

page 722. For Sup. No. 20537 read 20587.

page 750. Figure 1. Replace that printed by

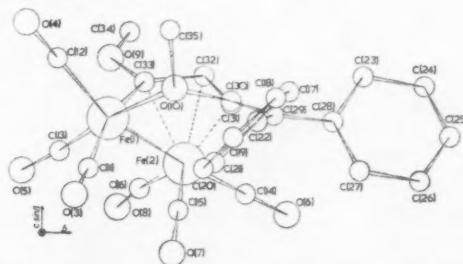


FIGURE 1 The molecule projected down the z axis, showing the crystallographic numbering

* From foot of main text.

1

2

3

4

5

6

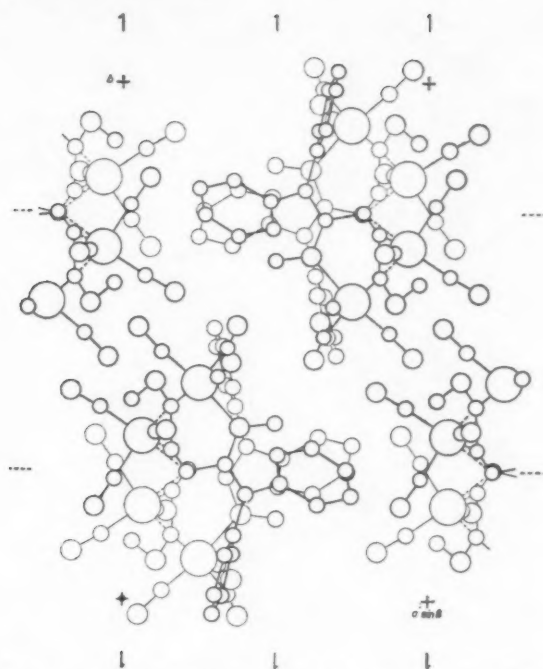


FIGURE 3 The packing of the molecules, viewed along the c axis. Those in heavy outline are closest to the observer

page 955. 'The crystal, tris-(ethylenediamine)zinc(II) nitrate is anhydrous and does not form a hexahydrate, as stated in the legend to Figure 7 and in the experimental section of this paper'.

page 1068, r.h.s. line 11 *. For bond length 211 pm read 214 pm.
line 10 *. For bond length 214 pm read 211 pm.

page 1232, r.h.s. line 4. After '... take place'. Add Loss of co-ordinated ammonia from the reactant $\text{Cr}(\text{NH}_3)_5\text{H}_2\text{O}^{3+}$ becomes significant at pH's > 4.0 .

page 2361, Table 1, 7th column, headed $\nu(\text{P}=\text{S})$ cm^{-1} .
12th entry, for 628 read 605.
13th entry, for 622 read 604.

page 2595, Authors. For Giulio Ingletto read Gianluigi Ingletto.

* From foot of main text.



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DALTON TRANSACTIONS
Inorganic Chemistry

Part I, pp. 1—1004

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